This is a reproduction of a library book that was digitized by Google as part of an ongoing effort to preserve the information in books and make it universally accessible.

Google™ books

https://books.google.com

THE FIRST OFFICIAL

THE ROYA
MOURED CO

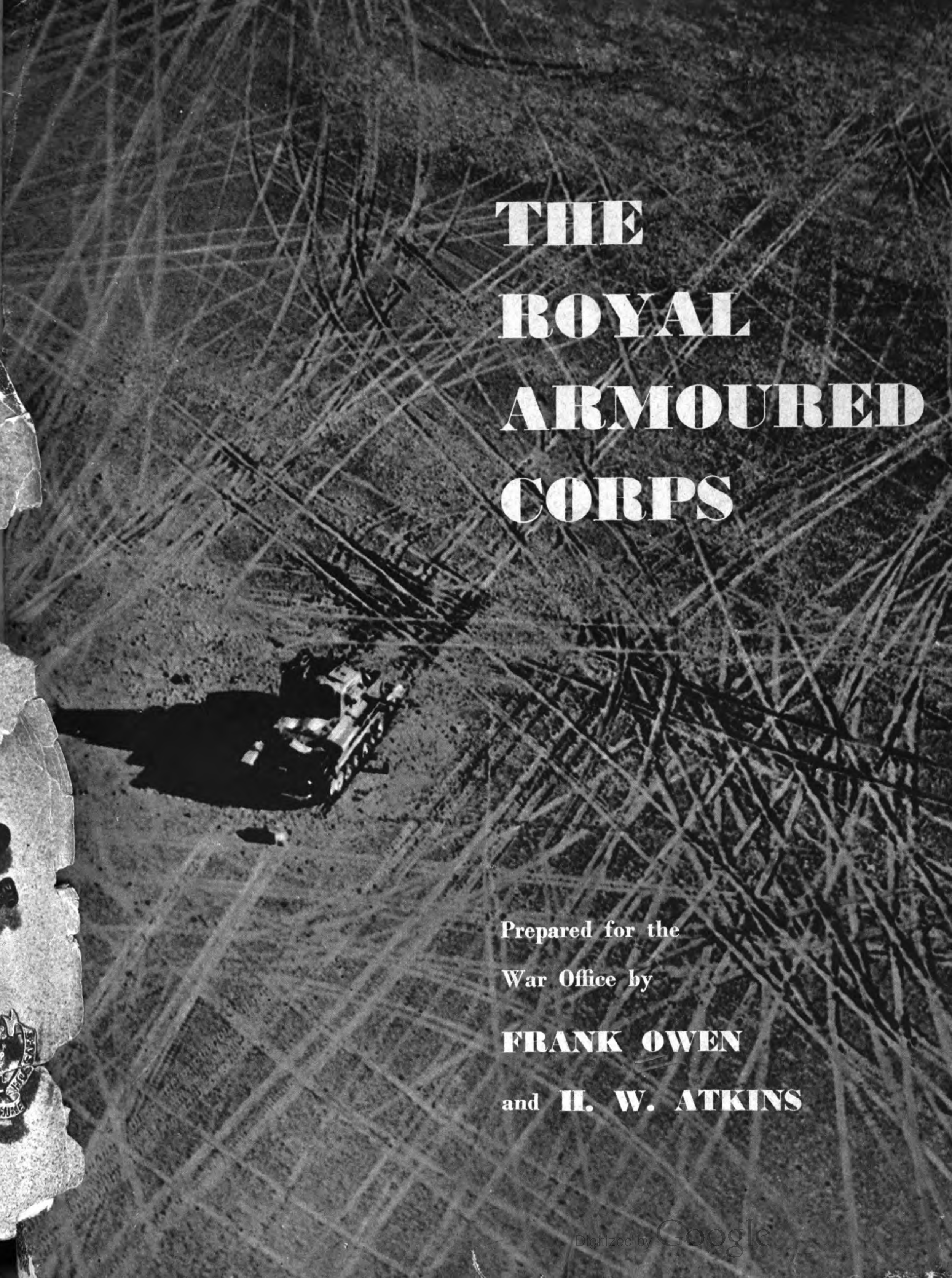
D
760
.R89
O96

A 475361

THROUGH MUD & BL
THE GREEN FIELDS

ONE SHILLING NET

THE UNIVERSITY OF MICHIGAN LIBRARIES

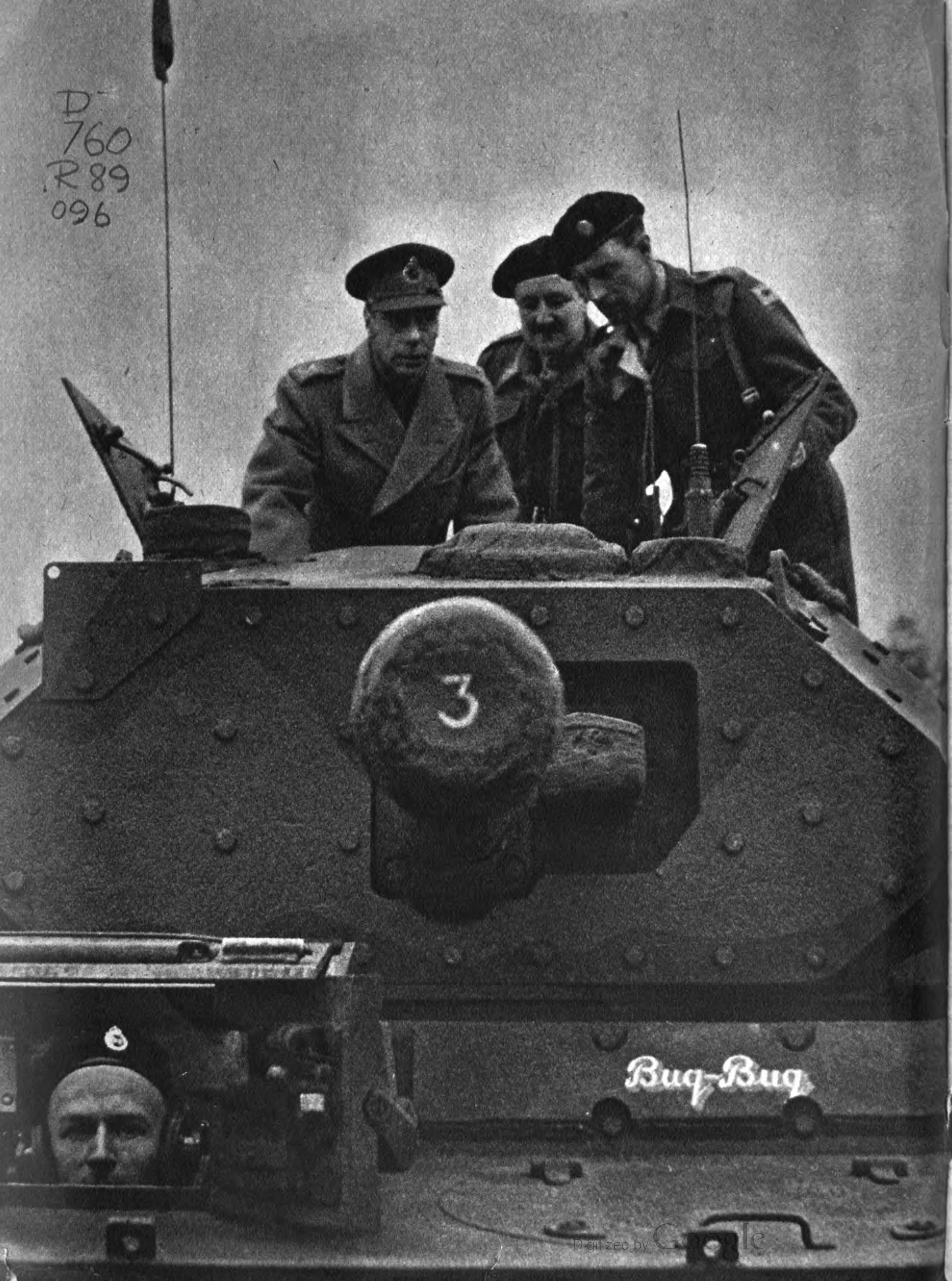


THE ROYAL ARMOURED CORPS

Prepared for the
War Office by

FRANK OWEN
and **H. W. ATKINS**

D
760
R89
096



741668-190

CONTENTS

1 THE TANK IS BORN Page 7

2 THE TANK GROWS UP Page 9

3 CIVILIAN INTO SOLDIER Page 17

4 ONE MAN, MANY JOBS Page 24

5 TROOPER INTO OFFICER Page 35

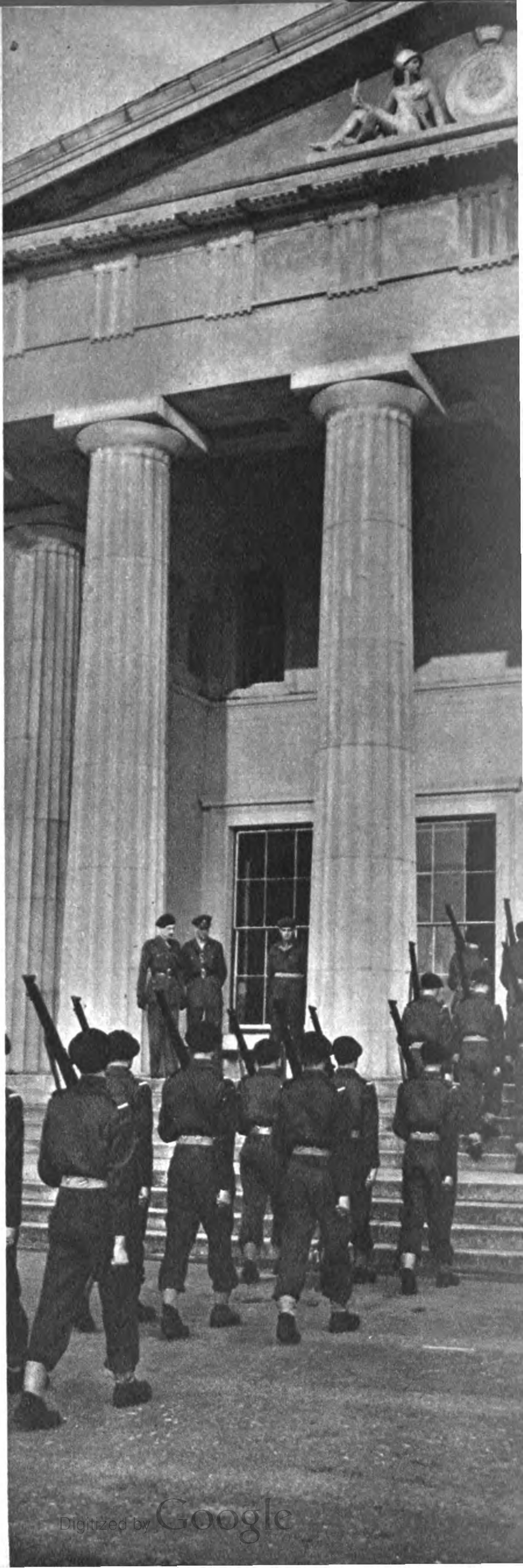
6 ROYAL ARMOURED CORPS Page 44

7 WAR IN THE SAND Page 48

8 THE CHANGING SHAPE OF TANK WAR Page 56

9 INTO BATTLE Page 60

MAPS Pages 36, 37 and 72



BATTLE HONOURS WON BY REGIMENTS OF THE RAC

Arabia
Albuhera
Arroyo dos Molinos
Abyssinia
Afghanistan 1839, 1878, 1879, 1880, 1919
Ali Masjid
Alma
Aliwal
Abuklea
Ava
Ally Ghur
Almaraz
Ahmad Khel
Aisne 1914-18
Arras 1917, 18, 19
Amiens
Avre
Albert 1916, 18
Armentières 1914
Ancre Heights
Ancre 1916, 18
Arleux
Aden
Aubers
Archangel 1918, 19

Badajoz
Blenheim
Beaumont
Bhurtpore
Balaklava
Bladenzburg
Busaco
Barrosa
Burma 1885-87
Bushire
Bazentin
Bapaume 1918
Beaurèvoir
Baghdad
Bellewaarde
Broodseinde
Bailleul
Bèthune
Bullecourt
Baku

Cape of Good Hope 1806
Corunna
Ciudad Rodrigo
Charasiah
Chitral
Cabool 1842
Canton
Carnatic
Chillianwallah
Cambrai 1917, 18
Canal du Nord
Courtrai

Delhi 1803, 1857
Deig
Douro
Dettingen
Drocourt Quéant
Damascus
Doiran 1917, 18
Delville Wood

Emsdorff
Egmont op Zee 1885
Egypt 1882, 1884, 1915-17
Épèhy
El Mughar
Estaires
East Africa 1914-16

Fuentes d'Onor
Ferozeshah

France and Flanders 1914-18
Frezenberg
Festubert 1914, 1915
Flers Courcelette

Guadaloupe 1759-1810
Gibraltar 1704-5
Givenchy
Goojerat
Ghuznee 1839
Gallipoli 1915-16
Gaza
Gheluvelt
Gravenstafel
Guillemont
Ginchy

Havannah
Hindoostan
Hindenburg Line
Hazebrouck
Havrincourt
Helles
Landing at Helles
Hafir
Hooge 1915
Hill 60
Hill 70

Inkerman
Central India
India 1796-1819
N.W. Frontier, India 1915, 16, 17
Italy 1917-18

Java
Jerusalem
Jaffa
Jericho

Relief of Kimberley
Defence of Kimberley
Kabul 1879
Kandahar 1880
Kut al Amara 1915-17
Defence of Kut al Amara
Kemmel
Khan Baghdadi
Khartoum
Krithia
Kilimanjaro
Koosh-ab
Kosturino

Louisburg
Lucknow
Leswarree
Relief of Ladysmith
Defence of Ladysmith
La Bassée 1914
Le Cateau
Loos
Lys
Langemarck 1914-17
Le Transloy

Malplaquet
Modder River
Maharajpore
Moodkee
Mysore
Minden
Maida
Martinique 1762, 1794, 1809
Mandora
Moro
Mons
Retreat from Mons

Pursuit to Mons
Marne 1914, 18
Messines, 1914, 17, 18
Morval
Mesopotamia 1915, 16, 17, 18
Megiddo
Macedonia 1915, 16, 17, 18
Menin Road
Murman 1918-19

Namur 1695
Nive
Nivelle
Niagara
Nile 1884-85
New Zealand
Neuve Chapelle
Nebi Samwil
Nonne Bosschen

Oudenarde
Orthes
Oppy

Peninsula
Persia
Paardeberg
Punniar
Pyrenees
Peiwar Kotal
Pegu
Punjaub
Pekin 1860
Persia 1918-19
Piave
Palestine 1917-18
Pozières
Polygon Wood
Poelcappelle
Passchendaele
Pilckem

Quebec 1759

Ramillies
Rolica
Rosières
Reshire
Rafah
Rumani

St. Lucia 1778, 1803
Shargat
Sevastopol
South Africa 1846, 1847, 1851-2-3, 1877-9, 1899-1902
Suakin 1885
Sahagun
Salamanca
Sobraon
Seringapatam
Surinam
St. Sebastian
Sholinghur
Somme 1916-18
Scarpe 1917-18
St. Quentin
St. Quentin Canal
St. Julien
Sharquat
Sambre
Scimitar Hill
Selle
Suvla
Suez Canal
Landing at Suvla
Struma
Sharon
Sari Bair
Scherpenberg
Soissonnais-Ourcq
Shaiba
Siberia 1918-19

Talavera
Tarifa
Tirah
Tournay
Tell Asur
Tel-el-Kebir
Toulouse
Taku Forts
Tigris
Tangier 1662-80
Thiepval
Tardenois
Tsingtao

Vittorio Veneto
Valenciennes
Vimy 1917
Villers Bretonneux
Villers on Cauchies
Vittoria
Vimiera

Warburg
Willems
Waterloo

Ypres 1914, 15, 17, 18

London: His Majesty's Stationery Office

First Published 1945

1. The Tank is Born

It is to his tanks that the enemy owes his success.

Ludendorff, in a despatch, August, 1918

OUT OF THE MIST and breaking darkness of the September dawn the German sentries saw it first in battle, lumbering towards them across the desolation of No Man's Land. And then in a moment more the dim, huge shape of the most terrifying enemy on this earth since man faced and fought the armoured monsters of the Prehistoric Age loomed up above the parapets. It was THE TANK.

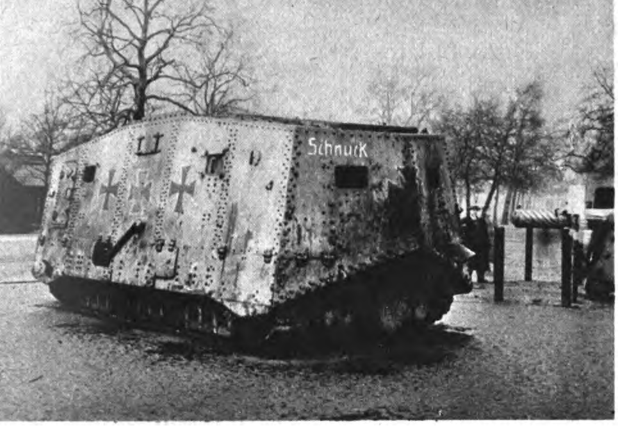
What grey fear and horror seized the hearts of those front-line watchers may only be imagined. Many of them fell under the oncoming guns. Some were crushed into the mud beneath the grinding tracks. Others fled shrieking, with hardly a glimpse of it, to spread panic and havoc far to the German rear. Between the two opposing front lines, thirty Tanks were smashing past barbed wire, wallowing along through the craters and gun pits.

1916. The First of the Many.

But the ground chosen for the attack was, in fact, quite unsuited to tank operations. Many of the vehicles floundered, heaved, and were at last bogged down in the conquering slime. The first tank attack in history had only a limited tactical success. Yet the fact that a score of the machines did reach their objective proved that tanks could breach a defence which had held 300,000 men in check through two years of artillery bombardment and infantry assault. The tonic effect on our own troops was graphically expressed in the exulting message which a British airman sent back: "A tank is walking up the High-street of Flers with the British Army cheering behind." This was the debut. The scene, the Somme. The date, September 15th, 1916.

The monster was the Mark I Tank, and it was armed with two six-pounders and three machine guns. It was variously named as "Mother," the "Trench Dreadnought," the "Iron Box," and by the Germans, characteristically, "Schutzengrabenvernichtungpanzerkraftwagen." In Britain, where it had been invented and produced, to confuse any spy who might be in the factories, it had been labelled "TANK."

The idea of the tank is as old as warfare itself, and it is simply this: to move your striking power (or fire) toward the enemy as swiftly and as securely for your own troops as you can. The first written record is found in that greatest book of wars, the Bible. Jehu in his chariot, with charioteer, bowman, and shield-bearer, was the Old Testament tank commander. He drove furiously against the foe, and they could not easily get at him. Even his horses wore armour. Boadicea was our Ancient British model. It must be credited to Boadicea that in her tank she exploited the terror value of noise better than they did in the prototype of Jehu. The axles of Boadicea's chariot were fitted with hollow tubes, which gave forth a moaning noise as they revolved, rising to a shriek rather like an air raid siren.



Schutzengrabenvernichtungpanzerkraftwagen. Germany's answer to the Tank, exhibited on the Horse Guards, London, 1918.

Even more terrifying, of course, was the tank of the great Carthaginian general, Hannibal. His tank was the elephant. The first sight of this new battle mammoth shook even the stout-hearted Roman legions. But it was tactically unreliable, for when the elephants took fright themselves, they turned and charged their own infantry. After Rome fell the mediæval knight in armour was for several hundred years the one horse-power tank.

At the end of the Middle Ages, about 1430, came the strange figure of the Czech general, Jan Ziska. General Ziska repeatedly and heavily thrashed the German aggressors of his day when they invaded the Czech lands. Early in his wars Ziska was left with only one eye, and later he lost that one too, but he possessed an entire "Armoured Corps." His tanks were large lumbering wagons, armoured with raw hide, mounting cannon and sometimes propelled by horses encased within the frame. These armoured fighting vehicles struck terror wherever they went; their tactic was both shock attack and encirclement of the enemy flanks, and their defensive formation was the ring of vehicles locked wheel to wheel with cannon pointing outward, which really is the "leaguer" that desert fighting has revived in our own day.

Artillery and small arms fire gradually drove the vulnerable horse off the battlefield, and with the horse went the horse-powered vehicle. It was the petrol engine which brought the tank back to warfare in modern form. Some new method was needed to bring fire power to bear on the long, deep line of entrenchments into which the opposing armies had sunk on the Western Front in 1914–18. It was by British brains that the twentieth-century version of the tank was conceived, and it was by British hands that it was created. It was by a British unit, the specially raised Tank force, that the dominating weapon of modern land warfare was introduced to break the military deadlock.

Who invented the tank? We know the origin of the Vickers gun, the Bren or the Browning machine gun. The genius who made the modern tank is not so easily identified. Forty years ago Mr. H. G. Wells wrote an uncannily accurate forecast of the coming clash of armoured engines. In the evolution of the tank—Britain's secret weapon of World War I—inventors, engineers, soldiers, sailors, airmen, statesmen (including the then First Lord of the Admiralty, Mr. Winston Churchill), played their several and vital parts. But which particular person actually constructed the first working model? A Royal Commission set up after the victory narrowed down the practical claimants to fewer than a dozen. The largest payment, of £15,000, was made jointly to Sir William Tritton of the tractor-building firm of Foster & Sons, Lincoln, and to Lieut. W. G. Wilson of the Royal Naval Air Service. With this award went "the credit of designing and producing in a concrete practical shape the novel and efficient engine of warfare known as the Tank."

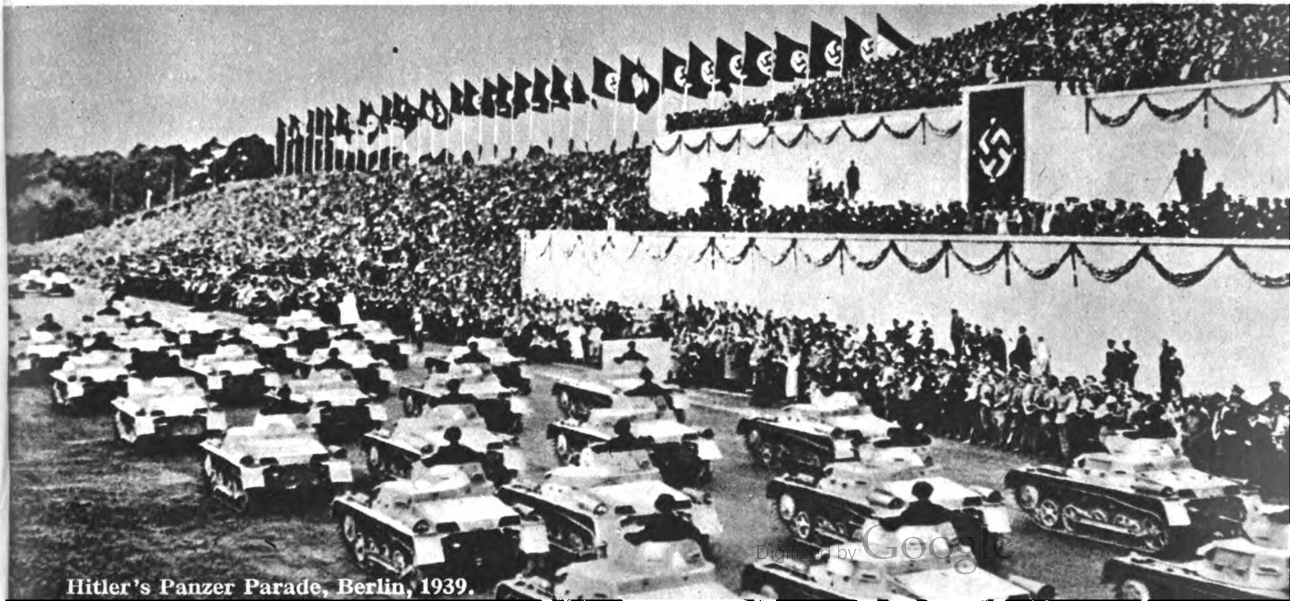
So the tank was born. We have seen how it was first employed, in penny numbers on the Somme in 1916. Apart from the local success which the tank there achieved, its performances did not impress the higher military authorities. The mercy was that the German enemy also underrated it. A year later, on November 20th, 1917, at Cambrai, the tank justified the faith of all its disciples. On that day Brigadier-General Hugh Elles, commanding the Tank Corps, led nearly 400 of his fighting crews in direct assault against the Hindenburg Line. From the turret of his own tank, Hilda, heading the centre division, fluttered the brown, red and green colours of the newly-created Tank Corps, the foundation of the tank soldiers' motto, "Through mud and blood, to the green fields beyond." The tanks of Cambrai smashed through a defence zone five miles deep. Between dawn and dusk they captured 9,000 prisoners, and a hundred guns. It was the pre-birth of the *blitzkrieg*. So astonishing was the tank success on that day that the infantry reserves massed in the rear to exploit the break-through failed to keep pace with the battle, and forfeited a grand opportunity of rolling up the entire German line.

Another year passed, and once more the chance was offered. At Amiens on August 8th, 1918, British tanks shattered the front and the heart itself of the enemy in what Ludendorff described as the "Black Day of the German Army." That night the victorious British counted 16,000 prisoners and two hundred German guns, and the Kaiser told a confidant, "We must sue for peace."

The tank had crashed into its own. Five thousand tanks and ten thousand tractor-carriers were ordered for the next year's offensive, and if the enemy had not suddenly collapsed on November 11th, 1918, British tanks would have arrived in Berlin in May, 1919, in exactly the same style that German tanks reached Paris 21 years later.

2. The Tank Grows Up

ON HITLER'S BIRTHDAY, April 20th, 1939, the greatest parade of tanks ever yet seen appeared on the streets of Berlin. For nearly four hours the mass of armour rolled past the Fuehrer and the group of military attachés and



Hitler's Panzer Parade, Berlin, 1939.

Obstacle overcome, May 1940. The Dutch had blown up the trees, blocking the road. The Panzers went round through the fields. Such is the mobility of the modern tank.

foreign observers who stood with him at the saluting base. When it was all over, Hitler turned to the visitors, who included Major-General J. C. F. Fuller, one of the pioneers of British tanks in 1916-18. " How do you like your children ? " he enquired. The British General answered, " Your Excellency, they have grown up so quickly that I hardly recognise them."

In the first World War the Kaiser's Germans had paid in full for their failure to assess the power of the tank. They had manufactured only fifteen of their own, none of them of much use. Hitler's Germans avoided the same error, and while France built a concrete tomb called the Maginot Line and Britain planned to build a single armoured division, the Nazis raised an entire mechanised army of six divisions, proposing to expand this force fourfold in due time. Less than half a year after the Berlin Birthday Parade, three thousand Nazi tanks tore through Poland like a tractor-reaper across a cornfield and in 18 days a great army lay mutilated beneath its tracks. Mobility had been restored to the battlefield, and a military revolution was complete.

It required the fall of five more countries, including mighty France, before the world in general realised what had taken place. The abrupt ending of World War No. 1 had, in fact, obscured the truth that already mechanization was re-shaping the anatomy of war. The land battle of to-morrow was to be carried forward at twenty times the pace of the indomitable foot-slogging infantryman of Passchendaele and Ypres. The Mark I Tank, parent of all the future vast tribe of tanks, travelled in top gear at only four miles per hour, but it was certain that tremendous increases in speed would very soon be developed.

The first tank was a battering ram. Its

Sand castle. As Rommel retreated, he left many tanks entrenched hull-down to act as fixed anti-tank strong-points.

Cruiser tanks in line ahead. Their speed enables them to sweep round the enemy flanks and strike at his rear.

function had been limited to breaching the enemy wire, overrunning the machine-gun nests, and shooting up the riflemen who lined the fire-steps against the oncoming waves of the assault. The first tanks kept pace roughly with the infantry, and as closely as possible they also kept within hail or signal range of their fellow tanks, since mobile wireless communication had not yet arrived on the battlefield. The tactics of the tanks were confined to making a violent irruption frontally, and then fanning out behind the broken trenches over a strictly limited area. The modern Infantry ("I") Tank, such as the Churchill, indeed descends directly from the old Mark I Tank. For it works very closely with the infantry in the assault, though sometimes, as at El Alamein, the infantry go in first.

By contrast, for a period in the present war the modern cruiser tank fulfilled an entirely different rôle. It embodied, in fact, the first striking development of the tank in warfare since its original appearance. The task of this cruiser tank was not so much the breaching of the enemy's front for the torrent of infantry as the encirclement by armour of his flanks and the penetration of his rear and headquarters, in order to paralyse the directing brain and destroy the adminis-

War in the snow. Red Army tanks move forward in the great winter counter-offensive.

Top : There were not enough. One of the French tanks on the Western Front, 1940.

Centre : **Panzers on Russian front. They went through mud and blood, but there were no green fields beyond.**

Bottom : **The Churchill. An "Infantry" tank for close support of infantry assault. Heavily armoured and mounting a six-pounder gun.**

trative muscles of whole groups of armies. It was the development of speed above all which permitted this immense enlargement of the tank's task, and during the heyday of the panzer divisions speed dominated both armour and armament.

The tides of war seem, at this moment, to be setting rather in the other direction, and there is a marked tendency to use the same tank for a dual purpose. But how far this will work out remains in doubt. It is certain that tanks generally will continue to discharge two tasks : (i) to help break down the enemy front and (ii) to break up his rear. The tank leaders of the last war had already seen a vision concerning these tasks, and such actually was the essence of the famous still-born "Allied Tank Plan, 1919," which laid down the lines of a gigantic armoured thrust of both heavy and medium tanks penetrating to the Rhine.

These bold ideas did not die with the Armistice. Leading British tank officers, displaying an astonishing energy of literary expression, cherished and nourished the theory of the armoured war throughout the years of the unarmed peace, though they had to practise it with the most slender means. In France, a Colonel De Gaulle preached a like gospel in a series of prophetic studies entitled "The Army of the Future." De Gaulle called for a corps d'élite of 100,000 of the fittest, most intelligent professional troops, thoroughly and harmoniously trained to a system of mechanized speed, shock and fire-power. This New Model Army was to be the main striking power of the Republic to disrupt and unhinge the coming invasion from the Reich.

The French High Command rejected De Gaulle's doctrine ; the German High Command embraced it. A Nazi soldier, Guderian, later to be heard of in Poland and elsewhere, also wrote a book about this time entitled "ACHTUNG ! PANZER !" or frankly, "LOOK OUT !" In the Battle of France, General Guderian's Corps of Panzer Divisions burst through the steep, unguarded woods of the Ardennes at three points, scythed across the supply lines, cutting off entire corps, concentrating once more to strike, this time from the French rear itself against the disorganised mass of the retiring troops. Within a week after the break-through near Sedan, Guderian's tanks arrived on the English Channel. The chaos the panzer divisions created among the armies was surpassed only by the terror they sowed in the civilian heart.

Against Hitler's five or six thousand tanks the French mustered possibly three thousand, many of them more thickly armoured than the Germans and with a heavier gun, but outstripped in speed and lacking both wireless and the mobile fuel-tenders which gave the panzer divisions such a formidable range of action. France's most terrible and tragic shortcoming, however, was not in her military equipment but in her military doctrine. The French tanks were designed to work with infantry and artillery against entrenched positions, but not to fight against other tanks. Even when this latter necessity was imposed upon them by the German break-through, the French persisted in using their tanks over a wide frontal area in support of local infantry counter-attack. The three original French armoured divisions (each one disposed but half the tank strength of a panzer division) spread along the entire Western Front, and were defeated piecemeal. Only De Gaulle, who gathered all the tanks of the 4th Armoured Division into one fist and hit back violently at the sprawling enemy around Laon, had any real success.

A new monster in the jungle. An Australian manned General Stuart blasts Jap positions as Infantry work forward for the assault. The picture was taken under fire.

As for the British Army away to the north in Flanders, it possessed about two score of tanks with guns and some hundreds armed with machine guns only. The enemy deployed five panzer divisions against them. Nevertheless, because the British held together and disposed their anti-tank fire with skill and tenacity, they were able to conduct a disciplined withdrawal to the sea. At Calais a battalion of British tanks and three Rifle battalions defended the citadel for four days against overwhelming odds, enabling the French to flood the waterlines and close the western approach to Dunkirk. The eastern gateway to Nieuport and Dixmude was held fast by the desperate bravery of the 12th Lancers, covering the sappers who blew the bridges. South of Arras, the solitary British Tank Brigade (General Pratt) massed in miniature armoured force with the 50th Division of General Martel, who commanded the operation, proved in two days' hard field fighting that there really was an answer to the proposition that armoured attack could sweep everything before it. This answer was, briefly, armoured counter-attack.

The Russians later were to re-demonstrate this on a colossal scale in the mighty defensive battles in front of Moscow. Once again the panzers burst through the defence zones, this time plunging past even the formidable mass of artillery which was the main strength of the Red Army. But then in the words of the German Colonel Soldan, shrewdest of the

Reichswehr observers, "*The panzer division pushes through, only to find that in its own rear the hole it has just torn has been sealed up, and on the flank or from the front, or rear, perhaps from every side at once, there appears an armoured enemy as mobile as itself.*" This was not in Hitler's book, and its omission has perhaps cost him, totally, fifteen full panzer divisions and three million troops of all arms.

The sunny morning of the panzer division was, in fact, already moving up to its high noon as early as the summer of 1940. It is worth while recalling now what a panzer division actually was in the shattering days of Sedan and Dunkirk. Its ration strength was 14,000 men, its number of vehicles 3,000; it consisted of three echelons on land and one in the air—

(i) Reconnaissance Battalion of armoured cars and motor cyclists armed with machine-guns and mortars.
(ii) Shock brigade of 450 tanks of mixed types, mostly light.
(iii) Occupying force of an infantry regiment, artillery regiment, anti-tank units, with sappers, signallers, pioneers, and other services, all borne in armoured lorries.

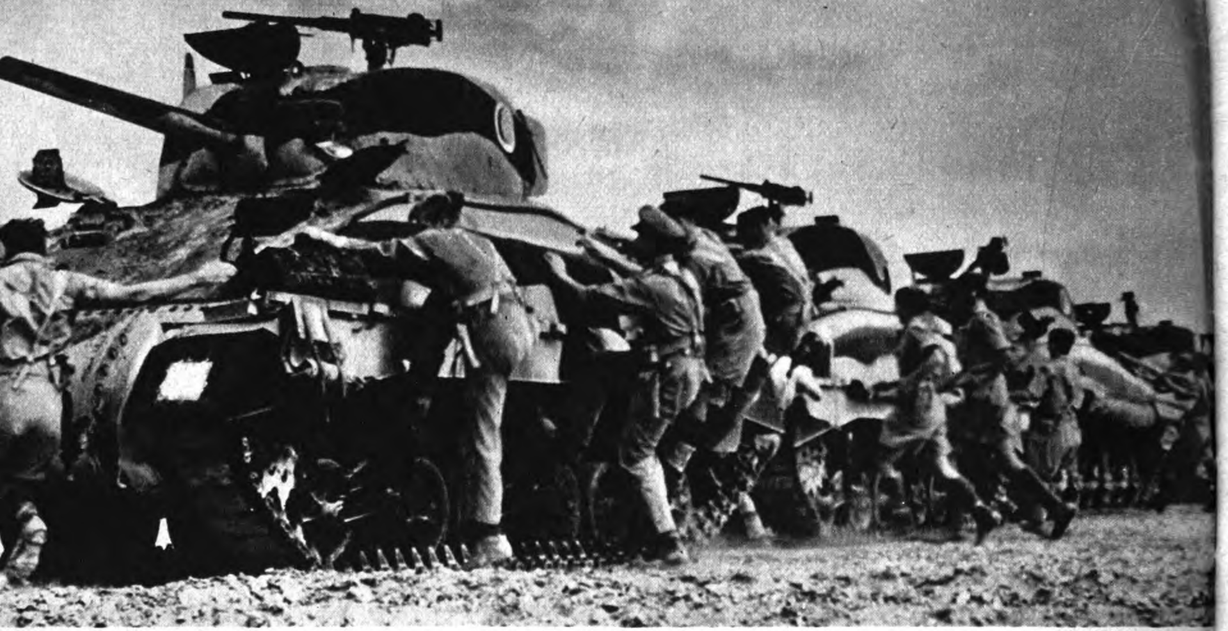
Thirty-two dive bombers were on call for the Divisional Commander, and a dozen reconnaissance aeroplanes cruised above the battlefield. Allowing for the modern material developments of mechanisation and aircraft, the panzer divisions fulfilled exactly the same rôle as Cromwell's terrible cavalry army of Ironsides. That is, they were the main striking power, and not merely the exploiting force of mounted men which Allenby so brilliantly used in Palestine in the last war, and which Haig was never able to use in Flanders at all. The triumphant early panzer divisions, after breaching the front for themselves, poured through their own gaps and sought out and destroyed their own objectives. They contained within their formations all the weapons required to do precisely this to any army in the West at that time.

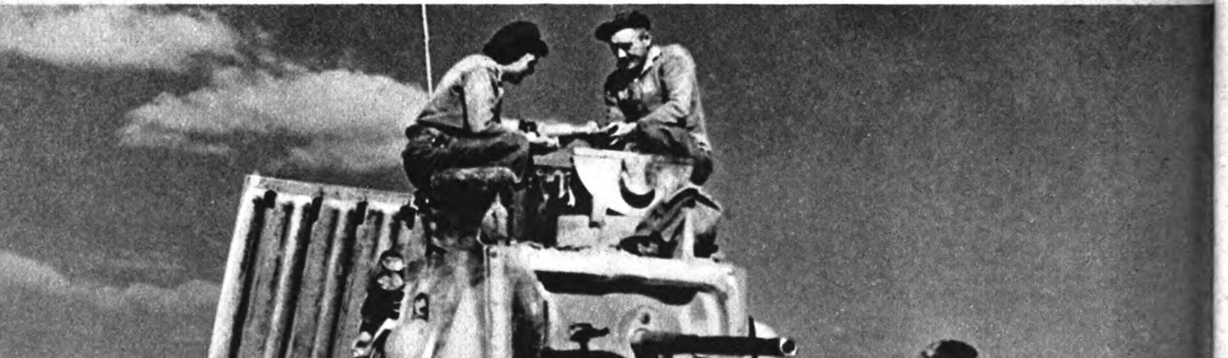
But new conditions of battle were to bring new tactics and a new technique of organisation. We owe it to the creators and commanders of the Royal Armoured Corps, that in rebuilding in Britain a new mechanised army after Dunkirk, we did not make a slavish imitation of our enemy's success. The composition of the Royal Armoured Corps (it had been formed in April, 1939) was to some extent a safeguard against running to an extreme in the direction either of the German or the French practice. For the Royal Armoured Corps included not only the Royal Tank Regiment, with its record of magnificent achievement from the Somme onward which has been recounted here, but also cavalry and yeomanry regiments, whose battle honours were old and glorious before Marlborough went to war. Later, infantry regiments were to be embodied as well, still under their own famous names, in the Corps bearing the initials soon to be known over the world as the RAC. Within this flexible frame a mass of heavy and cruiser tanks, of armoured cars, mobile artillery, infantry and assault pioneers was being steadily built up. The Royal Tank Regiment taught the cavalry men how to handle machines instead of horses, and the cavalry brought their own dash and verve into the Royal Armoured Corps.

There was not much time left to get going. If for the moment, after the capitulation of France, the Germans could not launch invasion against Britain, by this time the Italians had entered the war, and they were willing at any rate to launch invasion against Egypt. All through the summer of 1940, therefore, a steady trickle of British armour made its way to the Nile Delta. Before Marshal Graziani felt himself secure enough to strike, General Wavell had created in the Western Desert a British model armoured force. The dash upon Benghazi in the winter of 1940–41 introduced to the Italian Fascist Army a rather late but quite perfect example of the *blitzkreig* which their own Nazi allies had until that date monopolised in Europe. Thus opened auspiciously the first chapter in the long desert war which in May 1943 reached its triumphant end.

This classic struggle, flowing backward and forward for nearly three years over nearly two thousand miles, brought forth, as we shall see, its own unique and extraordinary forms of battle, and gave to history its own deathless tale of heroism and endurance.

Armoured battle. Soviet tanks and Panzers in head-on clash on the Eastern front. The Russian tank-busting aircraft and Stukas peppered the battlefield with bombs and fought one another in th sky above it.





op : **Crews ! Mount !** Note the Ack-Ack machine gun on the turret ready for low flying enemy aircraft.

Bottom : Maintenance. RAC troops are taught to overhaul their tanks thoroughly every night before they think of food or sleep. The tank must be ready to march or fight at first light in the morning.

3. Civilian into Soldier

IT USED TO BE RECKONED that a tank soldier might fight for 72 hours in his vehicle before being withdrawn from the battle. In this war crews of the Royal Armoured Corps have fought for a month on end.

Even in the loose-ranging campaigns in Europe during 1940, armoured units seldom penetrated more than 40 miles beyond their main supporting armies. But in the desert, reconnaissance patrols of armoured cars and light tanks have been sculling around five times that distance away from their contacts. The day before yesterday, when an entire armoured formation moved along paved roads a couple of hundred miles, that was considered a test of good engine maintenance. To-day tank armies roll forward, marching and fighting, for a thousand miles across trackless desert or steppe. They owe this, perhaps, less to the excellence of their engines than to the skill and untiring resource of their own tank fitters and repair units, and the unceasing care of their crews. We have told the tale of the Tank; the rest of this story concerns the Men in the Tank.

A tank is more than a gun mounted on an armour-plated engine, otherwise it would be simply a self-propelled gun. Indeed, the gun is not necessarily the most important part of the tank—its machine-guns often do the most destruction. Then again, wireless is vital to the tank, in order to collect and pass back information and to transmit orders. The minimum tasks of the tank crew are to drive the engine, to fire the gun, and to operate the wireless.

If the tank is large enough it may have room for a separate Tank Commander, too. Otherwise, one of the first three members will have to take command as well as do his own job. In the larger tanks, such as the Churchill and the American Sherman, there will be extra gunners, drivers and loaders. But whatever the number of any tank's crew, there will always be these three different kinds of machines to handle—the guns, the engine and the wireless set. All technical instruction in the Royal Armoured Corps is designed to teach the tank soldier to master at least two of these trades.

In the limited time which he spends in his Training Regiment, the RAC trooper could not expect to become equally proficient at all the three trades. Though he knows one thoroughly and has a sound working knowledge of another, or even of two other trades, the driver-operator is sel-

You've got to be fit. It's a rough ride in a tank.

dom quite as expert at driving as he is at wireless, and the gunner-operator is not expected to know his wireless as thoroughly as he knows his guns. Nevertheless, when he gets into his service regiment, the efficient tank soldier will seek to make himself completely interchangeable at any job his work requires.

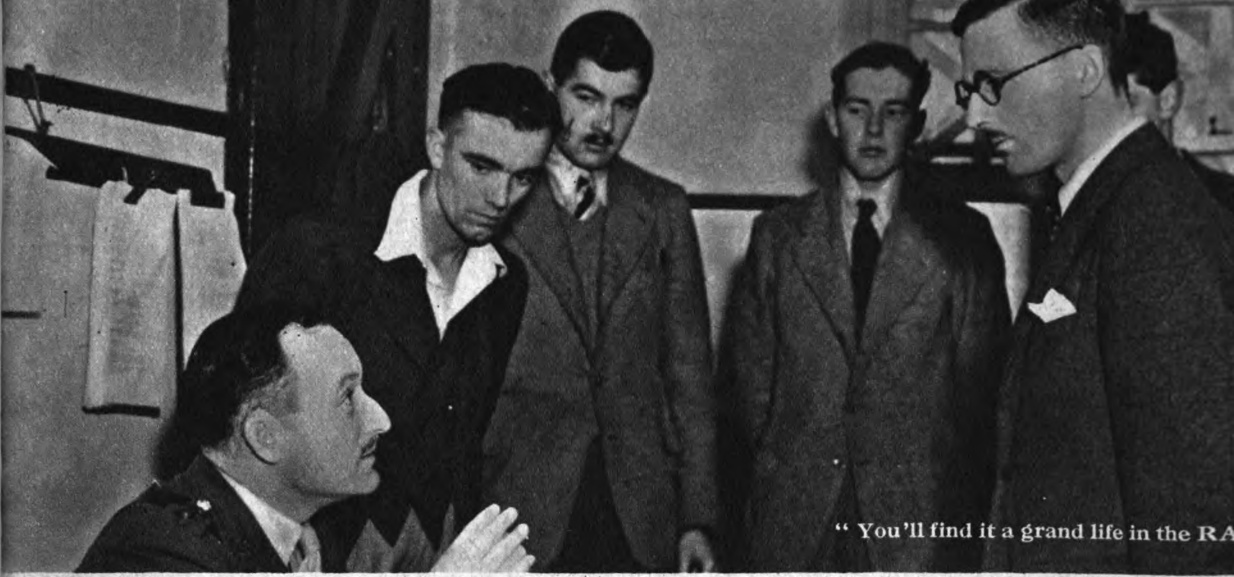
This is very far from being the whole of the RAC trooper's job. The Fighter or Bomber pilot steps out of his plane when his flying job is done and goes to report his flight and get a well-earned meal or rest. The tank soldier does not leave his tank. If he is in the field he first harbours his vehicle, covering it with waterproof tarpaulin and camouflaging it with net and tree branches. Then, if he has been firing, he swabs out his guns and cleans and oils them. He adjusts and tests his wireless set. He refills his petrol tanks, oils his engines and carries out regular maintenance and repairs on them, and ends by tidying up the entire tank. Only then can he go foraging for his personal requirements, perhaps fuel for a fire, and when he has gathered this he mounts a guard and cooks his meal—if a bivouac will not betray his presence to the enemy.

The tank soldier must learn field craft, the protection of sentries, and unarmed combat. He had also better acquaint himself with infantry assault drill. If their own tank is hopelessly wrecked in battle, the crew must make every effort to find another tank. They may have to fight their way across the battlefield as an infantry unit. But if this is not possible, then the crews must stick it out, using the tank as a fixed strong-point. Whatever happens, they must keep fighting, and never be captured. Tank soldiers are taught how to fight with Ack-Ack, Bren, and Vickers K guns, Tommy-gun, revolver and bomb, and all are available in a tank. If need be, too, the Besa or the Browning machine-guns can easily be taken from their tank mountings and used in the field.

To gain the basic knowledge required for this high standard, it is reckoned that the RAC trooper needs several months' intensive instruction, besides the primary training which every recruit in the Army must go through on joining up. This period is divided between various courses, depending on which are to be the main army "trades" of the trooper. As we have seen, in the tank itself these "trades" concern gunnery, driving and wireless operating. But there are also the indispensable fitters, electricians and technical storemen, and also, of course, the motor cyclists who act as despatch riders. For the purpose of giving each trooper, as far as possible, at least two trades there are eight main RAC categories :—

(1) Driver-mechanic (primarily a tank driver).
(2) Driver-operator (primarily a wireless operator).
(3) Gunner-operator (primarily a gunner).
(4) Gunner-mechanic (hull gunner and second driver).
(5) Driver IC (driving only wheeled vehicles).
(6) Mechanist (skilled vehicle mechanic, electrician or fitter gunner).
(7) Technical storeman.
(8) Motor cyclist.

Though the training for each one of these separate categories is different, in broad design that given to the men who are going to make up the actual tank crews does not greatly vary. So that if we follow the fortunes of a recruit from the day he joins the army until he becomes, say, a full-trained gunner-operator, we shall get a fair sample of an RAC trooper's life. In practice, too, the initial weeks' gruelling, which all recruits must undergo at the



“ You’ll find it a grand life in the RA

“ And fold ’em up this wa

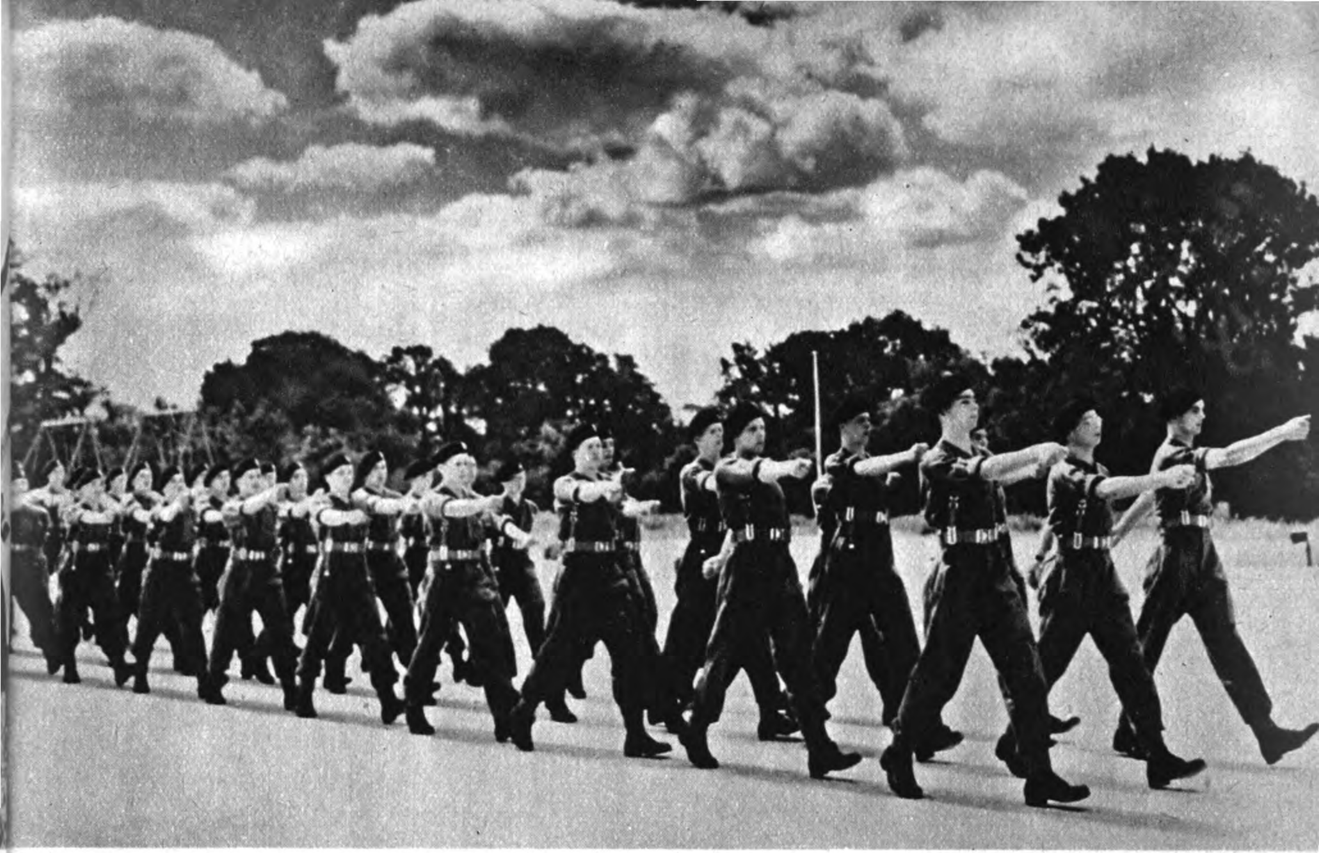
Their first Para

Day begins.

primary training centre in the General Service Corps before entering the RAC, is exactly the same. Here is the story, then, of every soldier who puts on the black beret of the Royal Armoured Corps.

The first few weeks of any job are supposed to be the hardest. Decidedly, in the physical sense these weeks of primary training preparing for the RAC are strenuous. For before the young civilian can become even a potential tank fighter he must have two qualities: he must be fit and hard, and he must know how to obey. There are sound reasons for both these requirements.

Living and working in a tank is a task that cannot possibly be carried out by either a lazy or sick man. If anybody imagines that by enlisting in the Royal Armoured Corps he is going to ride to his work, he will be disillusioned; instead, your work follows you round. For the tank driver to drive his 30-ton monster up and down hillsides, through woods and streams, across sand, bogs and beaches, calls for strength and stamina, as well as skill. It calls for something, too, from the gunner to squat for hours on end with his forehead glued to a rubber brow-pad and his eye glued to the rubber eyepiece of his telescope, with one hand working the power traverse which rotates the turret, with the other arm (or hand) keeping a 6-pounder or 75-mm. gun laid on a target from a swaying, jolting gun platform. As for the loader, who is usually the wireless operator, he requires all the concentration he can muster to stand up in a space just big enough for a man to squeeze into, and to fling shells into the



The soldier calls it Square-bashing.

breech with the mechanical precision and repetition of a piston. The loader must feed that gun whatever happens, and the machine-gun mounted alongside it, too, and if either jams he must clear them by immediate action. Just behind the small of his back is his wireless set, and in the intervals of loading the operator may have to receive or send messages, and perhaps sight and select the gunner's targets, too. No, the tank is not a Rest Home.

Concerning discipline. A tank crew in battle is not just Four Men in a Tank against Hitler. A tank crew is a single entity, like a human body. If the eye perceives, and the brain commands, and then the hand or leg doesn't function—then good-bye, body! If the tank commander spots an enemy tank waiting hull-down in ambush, and shouts his fire orders and the gunner is slow in getting on his target, or if the loader is loafing, or if the driver is not listening to the next vital order, " Driver ! Speed up for Cover ! "—then good-bye, tank !

So when you join the Royal Armoured Corps, to make you fit you must go through hard Physical Training every day. It involves rope climbing, vaulting, log-lifting and cross-country running. There is practical benefit to be gained in these log exercises, as the recruit will find when he comes to haul a six-pounder gun backwards out of a gun turret. And perhaps one day, as a veteran RAC trooper on the battlefield, when he has to jump out of a blazing tank and run through the bullets to another tank, he will not regret his arduous hours on the assault course.

To teach you to obey instantly on the word of command, there is foot drill every day (you may call it "square-bashing," and be understood). On the Square the young soldier learns to march, turn, salute and stand still. Next comes rifle drill and instruction in musketry, which is the use of the rifle and knowledge of its mechanism. Since the tank crews are also issued with pistols, the squads must go through pistol drill as well. The other weapons to which they get a practical introduction are the Bren light machine-gun, the Piat, the Tommy-gun, and the Sten. Then, beginning with a preliminary shoot on the indoor range with a .22 rifle, the squads fire with all these weapons on the open ranges.

Almost all this instruction is carried on in the open air. But so many periods every day (each period lasts three-quarters of an hour, with a five-minute break at the end, and there are nine) are allotted to the class-room, where the programme is map-reading, lectures on gas, tank and aircraft recognition, small arms, armoured formations, fieldcraft and camouflage. These lectures will be practically in the open air here, too, for the windows are always kept wide open, and the sun and the wind stream through. Every morning the recruits go back to school again with notebooks and pencil, while the sergeant-instructor, with chalk and blackboard, takes the place of the schoolmaster. Sometimes they go out into the countryside and do battle drill, practical map-reading and distance judging.

The day begins at Reveille, 6.0. "Rise and Shine! Wakey! Wakey!" bawls the orderly corporal, marching on his rounds. Get up then, soldier, wash, shave, dress and fold your blankets. Hurry outside for early morning roll-call. Breakfast at 6.45, and be there sharp, or you'll have to queue for it.

The Pistol is the RAC soldier's personal weapon.

Recruit behind the Bren gun.

Probably you'll get bacon to eat, and certainly porridge, too. At 7.35 the whole regiment is moving towards the parade ground. At 7.40 the squadrons are drawn up at attention in troops of three ranks deep. The Squadron leaders inspect the troops, and the working day rolls forward. It will go on, with a short break about 10 a.m. and an hour for dinner, until 5.30 p.m. brings tea time. After that, apart from guard duties or an occasional lecture, the trooper's time is his own. In practice he may find that when he has cleaned his equipment and written out his notes, an hour or so in the NAAFI will leave him not far short of Lights Out. It is a hard, full life. It takes all that a man can give, and it takes a man to give it.

The testing time arrives after some weeks. This is the Colonel's parade, at which the squads pass out as being efficient in their primary training—or do not pass out. Generally each intake of recruits is divided from their first day into two squads of about 40, and there is keen rivalry between them.

The squads parade on the Square, the Colonel appears with half a dozen regimental officers who will take part in the examination of each man. In succession the squads march past, turn about, and go through their rifle drill. Then the officers approach the squads, and, taking seven or eight men apiece, quiz them thoroughly on all that they have learned. At the end the Colonel addresses the parade—and that night the squads can usually celebrate the successful passing of their ordeal.

During this period of primary training the recruits are examined by psychiatrists, both orally and in a few simple tests, to discover the work for which they are best fitted. The recommendations of these psychiatrists form the basis on which the regiment selects the main trades which the soldier will work at in his future tank.

But for the moment the next important item in the RAC recruit's life is his first seven days' leave.

Every tank soldier is a rifleman, too.

The only way to know a gun is to take it to pieces—and put it together again.

4. One Man, Many Jobs

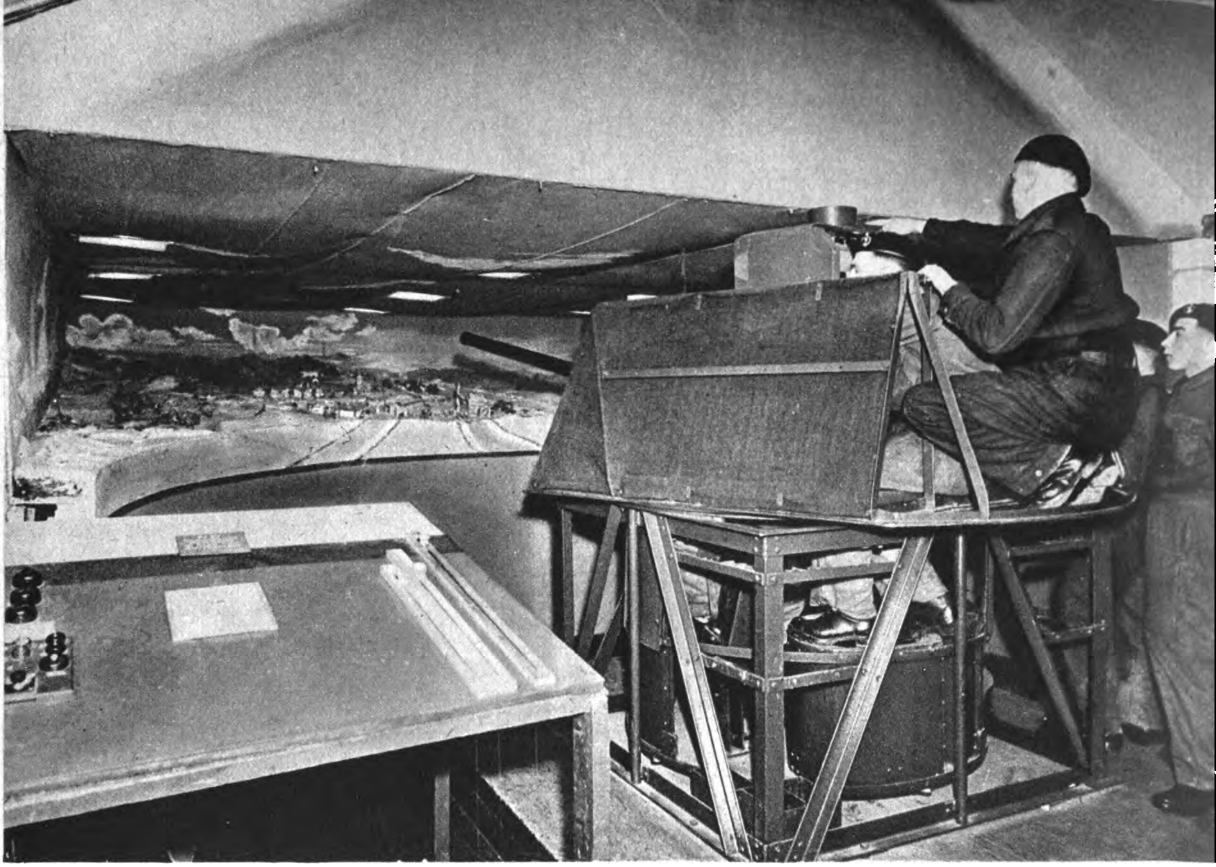
THE RECRUIT HAS GROWN up into a soldier. Now he is to develop into an RAC trooper.

For the next three weeks after he is posted to his RAC Training Regiment he receives an advanced course of General Military Training, elementary driving instruction (on wheels only) and preliminary wireless. It is now that the trooper makes his first practical acquaintance with the tank, clambering over its hull and diving down into the mysterious turret. He will probably be underneath that tank for the next day or so, cleaning and greasing her.

But in three weeks' time the trooper starts out to learn in practical detail the essential trades of a member of a fighting tank crew. In every Training Regiment there are three Technical Wings dealing with these trades, and to one of them, the Gunnery Wing, goes our future gunner-operator.

THE GUNNER

His course from now on will be gunnery, and apart from a daily refresher period of drill or PT (Physical Training), he will be working on his guns entirely for the next few



Gun crew drill on a battlefield in miniature.

weeks. The gunner will be grouped with a class of half a dozen others, and placed in the hands of an NCO instructor, himself an expert trained in the Armoured Fighting Vehicle School. This instructor will take him right through the gunnery course, reporting to his Squadron leader on his progress every week. The gunner will start with instruction, learning how to load, fire, strip and reassemble the Bren light machine-gun, the ·300 Browning machine-gun, the medium 7·92 Besa machine-gun, the 75mm. and the six-pounder guns. He will also be introduced to the tank howitzer and the hand grenade. His instructor will explain and demonstrate the rogue tricks of any one of these guns, which may suddenly decide to jam or simply not to fire, and will teach him how to overcome them.

When the gunner has grasped the mechanism of his guns he will be taught the way to use them. This primarily depends on a proper sequence of gun drill. So into the Crew Control room he goes next. Round the walls there is painted the panorama of a countryside with railways, villages, farms and woods. There are cardboard models of tanks, anti-tank guns and transports available to pin on this scene wherever required. In the centre of the room stands a revolving circular cage, mounting a gun. It is a skeleton tank turret. One member of the class sits at the gun, and a second stands beside him as gun-loader ; a third is perched high up in the turret acting as Crew Commander.

The Sergeant-Instructor pins a tank near the church behind the village inn, about 800 " yards " away. He signals to the Crew Commander to give the necessary orders. The Crew Commander shouts his first fire order, " Action ! " On that the loader flings a dummy shell into the breech and taps the gunner's arm to signal that the gun is loaded. Next order is " Seventy five ! Traverse Left ! " The gunner grasps and turns the spade-grip which revolves the turret. " Steady ! " (he is nearing his target now), " On ! 800 ! Hornet ! Left of Church ! FIRE ! " The gunner presses his trigger, but no shell flies from the muzzle. Instead, a pencil of light flashes along the barrel and shines on a transport parked outside the *Black Swan.* " Seventy five ! Stop ! Unload ! " commands the Sergeant-Instructor. " Now," he says, addressing the whole class, " the Crew Commander's fire-order was correct, but the gunner didn't listen. He was told to fire at the hornet (tank), but instead he fired at the transport two hundred yards in front of it. Try again, gunner. Carry on now with your next orders to the driver, Crew Commander."

Next door is the pellet range, where the class will actually fire at their targets, though it will be only with an air gun adjusted above the barrel of the seventy five. Once more a landscape stretches in front of the class, but this time it is not painted on a circular wall, but modelled in miniature on a long, sand-covered platform. There are date trees, desert forts, and minute tanks moving about the scene, drawn by electrically-operated overhead wires in any required direction. Again there is the crew of three at action stations in a turret cage, but this time the cage not only revolves, but it rolls and yaws, reproducing the irregular see-saw motion of a tank advancing across heavy country. The Sergeant-Instructor throws over the switch which sets the turret rocking, and the model targets moving across the sand table. Once more the Crew Commander barks his fire-orders, and this time the gunner fires with the air gun exactly as he would fire a real shell at a real target from a real tank, correcting his aim by observation of his shots. By this method, with economy and speed, the gunner is brought to the standard at which he can profitably be exercised on the open ranges.

There, probably against the background of the sea, he will fire live rounds from all his guns at various targets from both a moving and a stationary tank. Exactly as in action, the Crew Commander (who is this time the Instructor) rides sitting high up above him in the turret, spotting the targets as they bob up and directing the fire.

The gunner himself sits down below him at the bottom of the turret, his gun held in a shoulder grip at his right side (the machine-gun, called the " co-ax," because it is co-axially mounted alongside the seventy five, moves with it). His right hand is on the trigger handle, with its switch for either gun ; his left hand grasps the power traverse lever which revolves the entire turret. Peering through his telescope, the gunner sees only a small framed view of the countryside ahead. When the tank climbs steeply up a bank, a strip of the sky suddenly begins unrolling into that picture-frame, until it seems that the tank must surely be about to loop the loop. Then, as the crest of the bank is reached and the tank poises for a second, the telescopic reel of the sky stops, and starts rolling back again. As the first glimpse of earth comes back into his picture-frame, the gunner drives his shoulder harder into the gun grip, reaches his finger round the trigger, and searches the horizon with his eye—an enemy may lie on this horizon, and the first shot may be the final one in any tank battle.

The fire-orders fly fast. " Seventy five ! Traverse Right ! Steady ! On ! 700 ! Hornet ! FIRE ! Stop ! Same Target ! Go On ! Stop ! Co-ax ! Traverse Left ! Transport !

FIRE ! Stop ! Traverse Right ! FIRE ! " The turret whizzes round, the gunner's window discloses in turn a tank against a hillside, a transport rolling along a valley road, a machine-gun in the corner of a wood.

FIRE ! FIRE ! The gun jumps, the breech flies open, the barrel is flung high up off the target, the red tracer shell curves across the fields, showing the gunner where his aim is faulty. Through the headphones clamped on his ears (inter-communication between the members of the tank crew is also by telephone) the gunner hears his Crew Commander say, " Observation ; left and minus. Correction ; right and plus ! Target ! " The turret reeks with cordite and hot metal, the loader is still flinging shells into the breech, the machine-gun chatters, jams, is freed and sings again. The tank rocks to a halt at the end of its run round the ranges. " Not bad with the gun " says the Sergeant-Instructor as the gunner and loader change places for the next run, " but when you used the co-ax you sprayed the whole of Yorkshire."

One more test, an all-day examination in the care, control and maintenance of guns, telescopes, traverse mechanism and turret. The gunner-operator needs approximately 80 per cent. marking before the Gunnery Wing will pass him out as gunner. At his next parade he will fall in with the Wireless Wing. From there he will be qualified as a wireless operator before they let him go.

THE WIRELESS OPERATOR

If you are wise, and have time, you will practise a little Morse during your earlier courses in the RAC, because sooner or

Top : **on the ranges : the tank is " hull-down " behind cover and stationary. This is the ideal position for firing the gun, but the gunner generally needs to hit his machine gun targets while both they and he are moving.**

Centre : **Loader, 75 - millimetre gun in a General Grant.**

Bottom : **" Di-DA-DA-Di." Wireless operators must learn to send and receive messages in morse, at 12 words a minute.**

later Morse is coming to you. The standard that you must reach after several weeks' wireless training is 12 words a minute.

To some it comes almost naturally, but for most troopers Morse is to be conquered only as the piano, or the typewriter, or foreign languages are—by daily practice and sheer determination to overcome it. In one Training Regiment the wireless course was known by its more frustrated pupils as "Morstal," and its curriculum as "death by a thousand dots." The proportion of failures, nevertheless, was fewer than one in thirty.

Every day in the wireless school there are a couple of periods allocated to taking down or sending messages in Morse, and the Sergeant-Instructor will always be a word or two faster per minute than the student can comfortably manage. This is probably the best way in which speed can be improved. Practice really does the trick, and so while gunners make very little noise about their homework, wireless operators fill the barrack rooms day and night with the squeak and pip of the practice "buzzers" by which they seek to master the dot-and-dash art of Marconi.

But Morse is not the whole of wireless; indeed, it is really the least part of it. Essentially, the operator must learn and rigidly adhere to a prescribed procedure in sending and receiving verbal as well as Morse messages. For urgent and obvious reasons in the field, strict observance of a Security Code is insisted on. This is in order to keep the enemy baffled even as he listens-in to the most public of all conversations, which are those carried on over the universal air.

"BE CLEAR! BE BRIEF! BE CAREFUL! Give nothing to the enemy, *who is always listening*." These are the vital standing orders rammed time and again into the brain of every RAC wireless operator.

It is no good passing messages to your friends unless they understand them. BE CLEAR!

But it is worse than useless if the right orders are intercepted and understood by the enemy. A wireless message can easily be picked up in the field by a rangefinder, and the position of its sender located in a few seconds. Very soon afterwards the enemy artillery will be on the target. BE BRIEF!

Always use prearranged code for your own undisclosed positions, and for the names of your own units. BE CAREFUL!

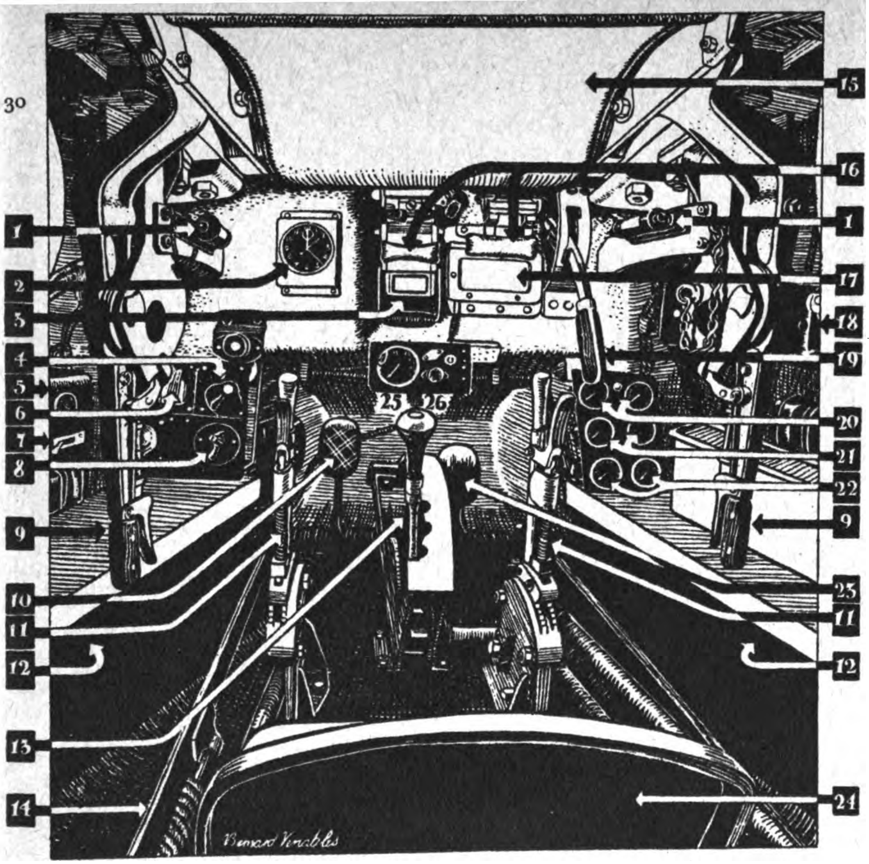
There is a whole litany of watchfulness which may not be disclosed here. But this may be claimed with truth—to-day RAC wireless operators can and do talk to one another across scores of mountain or jungle miles, and Jerry can neither tell who is talking to whom among our units nor make sense of what they say.

Anyone who has ever owned a wireless set knows how readily and unaccountably you can get "off-net." Imagine then how much easier it is in the heaving, vibrating metal cabin which is a tank, adding in the jars and dislocations set up not only by the firing of your own guns, but by a heavy enemy shot smashing against your turret. The RAC wireless operator needs to understand the working of his set, how to adjust, maintain and carry out repairs, how to take and send the vital signals which mean the life or death of his squadron in a battle. It involves at least a grasp of elementary principles while he is learning his job. So back to the classroom once more goes the operator, to study the electronic theory. There also he will probe into the workings of several kinds of wireless sets, and learn the art of tuning-in to his particular squadron or regimental net.

Besides wireless, the operator will practise lamp and flag signalling, and gain a grounding in the way tanks operate in squadron and regimental formation. In the lecture room the entire class of operators, with ordnance maps in front of them, will take part in a paper tactical scheme of armoured corps manœuvre, sending and receiving orders by

Top: **The voice and the ears of the tank. The wireless operator learns how to work his set.**
Bottom: **Now for some wireless in a tank in the field. The operator awaits his orders.**

DRIVER'S COCKPIT



1. **Festoon lamp**
2. **Stop and trip time clock**
3. **Periscope**
4. **Engine starter switch**
5. **Ammeter**
6. **Engine cut-out**
7. **Electrical switch box**
8. **Side and tail lamp switch**
9. **Driver's hood operating lever**
10. **Gear change operating pedal**
11. **Steering lever**
12. **Accumulators**
13. **Gear selector**
14. **Gear change operating rod**
15. **Driver's hood**
16. **Brow pads**
17. **Bullet-proof glass panel**
18. **Series parallel switch**
19. **Lever operating visor**
20. **Water temperature gauges**
21. **Oil pressure gauges**
22. **Air pressure gauges**
23. **Throttle control**
24. **Driver's elevating seat**
25. **Speedometer**
26. **Horn button**

There's a lot to learn in the Driver's Cockpit.

wireless, moving the little flags which represent their units to and fro in accord with the general plan.

Towards the end of the wireless course the wireless operators will go off all day, or even all night into the countryside in cars or tanks, working out in practice reconnaissance and attack schemes with previously worked-out routes, code and call signs. There, for the first time, they get practical experience of controlling or being controlled by Squadron Organisation. Discipline on these jaunts is severe, and nobody is permitted to augment his allotted rations either of food or drink.

At the end of the wireless course, once more the operator is examined all day in everything that he has learned in theory or in practice. Whatever else he forgets in the years to come, he'll never quite forget his Morse.

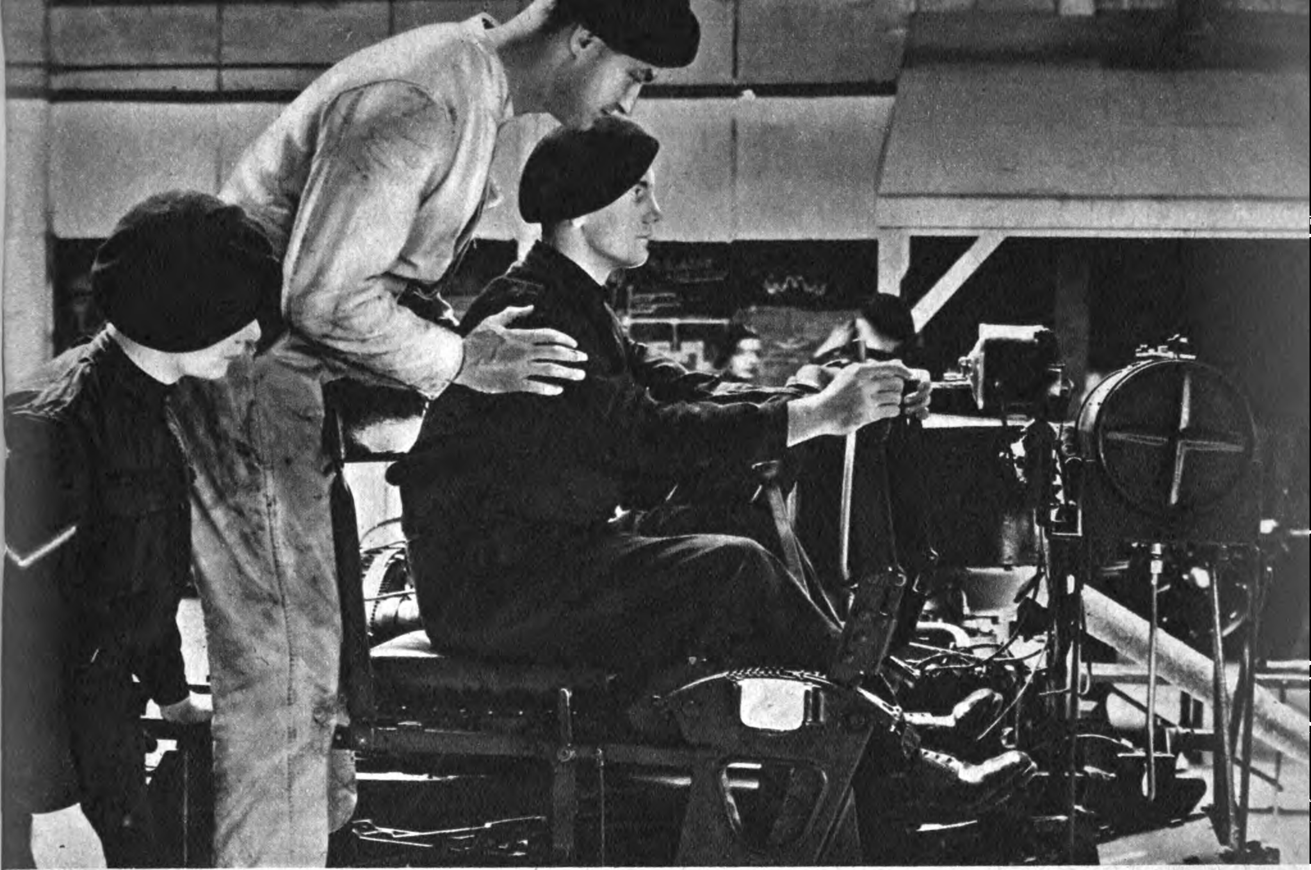
THE DRIVER

Who is the most important man in the tank? The Gunner? The Wireless Operator? Or the Driver?

The Gunner says "The whole purpose of the tank is to bring a gun to bear on a target—and I fire the gun. Without me and my gun you are simply birds for another gunner to pot at."

The Wireless Operator says "A tank without ears and a mind is a blundering beast. Though I see nothing (the Wireless Operator is generally too busy in action to see outside the tank), I get, and transmit, the orders. I am the brain of the tank, the vital spark in the whole show."

The Driver says "I move you fellows round, up to the battle, into the battle, through the battle—and home from the battle. Without me you wouldn't get out of the garage."



" Now pull the left lever and you'll turn to the left."

The argument will go on in the barrack rooms of the RAC (it goes on in the tanks actually in the lull of the battles) until Time has buried tank and tank men.

Perhaps, if there *is* any one key man in a tank, it is the driver. For in the end the tank depends on its mobility for its value, and of all the men of the crew the Driver is the one whose good (or bad) work fundamentally affects everyone. This is not only in his driving, but in his day-to-day maintenance. A tank that breaks down is, for that period, a total loss to its unit, and must be written off its fighting strength.

The driver begins his course at the Driving and Maintenance Wing (D & M) with a series of lectures on the theory of the petrol and diesel engines. These lectures explain **what actually takes place inside the engine ;** they are designed to teach the driver what may go wrong, and why, and how to put it right.

The next step is to teach him how to drive a vehicle. If you set off on a ride in your motor-car there is a certain procedure to be observed. First, you switch on your engine, then you depress the clutch pedal, engage the gear, release the brake, and allow the pedal to rise. Lo ! the thing moves !

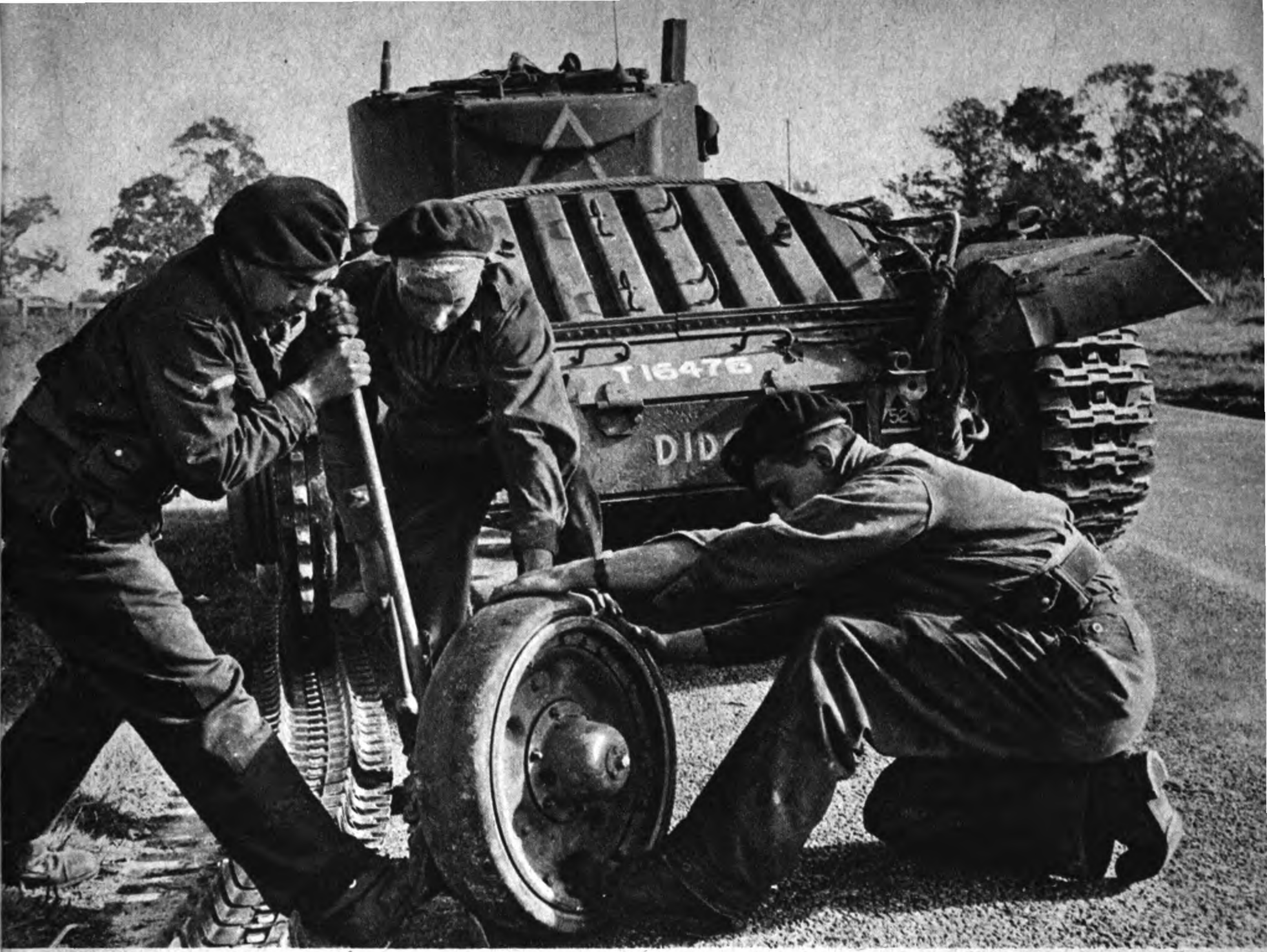
When you take a novice out on the road, and put him through this drill, however, quite a large part of the time is taken up with watching the road, negotiating corners, and waiting in traffic jams. Of course, you must master all these tiresome matters before you can become a driver. But the first step is to know HOW. Now, by far the easiest and quickest way of learning anything is not to ***hear*** **about it but to** ***see*** **it, as our ancestors** discovered when they drew the first pictures on the walls of their caves. So in the Driving and Maintenance Wing the Sergt.-Instructor sits the learner down in a model driving seat on a dais. In front of the driver is a dashboard full of lamps which flash (or don't flash) in correct sequence as he goes through the various motions of starting-up his engine, engaging gear, steering, braking and pulling-up. If the learner goes wrong the lights tell him more plainly than any instructor, and more quickly. By this method the driver, in half the usual time, learns his job of driving properly—in RAC style.

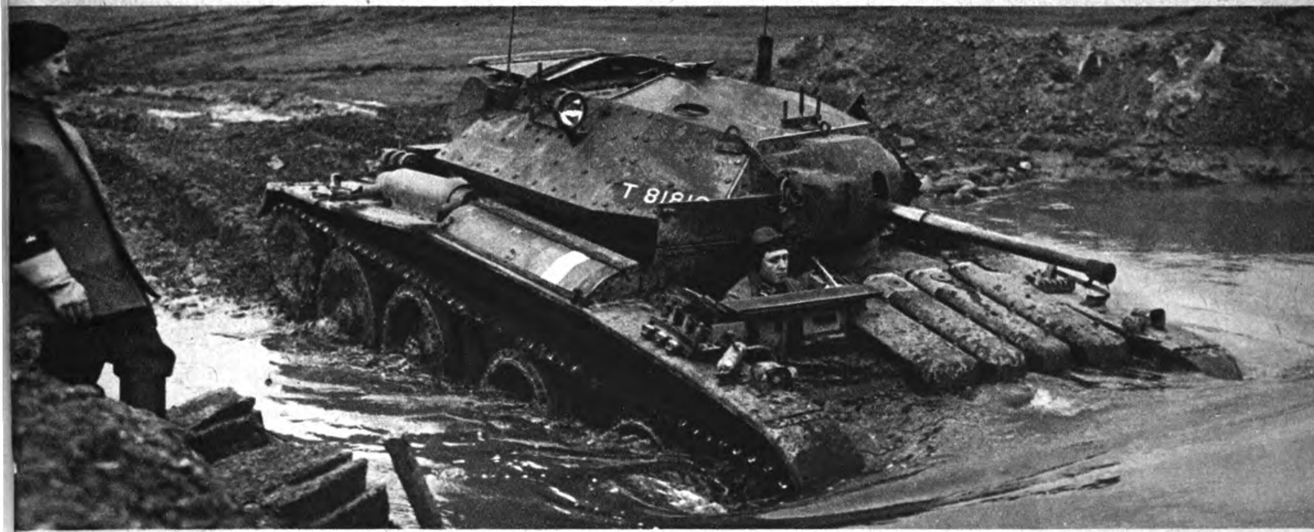
Next comes practice. The driver is exercised with both wheeled and tracked vehicles, until he becomes confident and capable of driving the tank or truck in his charge for many hours on end, over rough going and perhaps through bullet and shell-swept zones. Of course, the Crew Commander issues the directions "Driver! Speed up for Cover!" "Make for the corner of the wood!" "Hull down behind the crest of the hill!" and so on. But on manœuvres or in action the driver picks his path towards his objective for himself, and the driver who knows his job selects that ground which offers his tank the best cover, or gives his gunner the best chance of bringing his guns to bear effectively on the target.

What are the requirements of a good driver? When the cavalry regiments of the British Army were mechanised, few people realised how easily and naturally the cavalry men would adapt themselves to tanks. But there are two prime qualities which every good horseman shares with every good tank driver: (1) An "eye" for country, and (2) a "sense" of his mount. Driving a tank across country is much more like riding a horse than like driving a motor-car. There is no steering wheel in a tank. If you want to turn right or left you pull the lever on your right or on your left. These levers brake the right or left track, stopping it while the other track keeps moving on. A horseman uses his reins in exactly the same way. When you come to climb a parapet or jump a trench, you "rev up" your tank engine as you spur a horse to a jump. Just as your tank poises on the crest of the "jump," you take your foot off the accelerator and let her topple downward by her own weight. At least, if you do it that way you will get your tank over the obstacle smoothly and lightly, and without cracking the gunner's head against the turret roof or jerking the wireless set into the operator's lap. Tank drivers, like horse riders, are more easily born than made. It is astonishing how many natural drivers they discover down at the D & M Wing.

But Driving is only half the business. Maintenance is the other, harder half. Tanks have a tough life of it barging about this earth, and they break down more readily than motor-cars unless they are properly looked after. They take very much more repairing, too, as you will discover when you come to replace a broken tank track in the dark on some desolate moor. (There are seven thousand separate parts of a tank.)

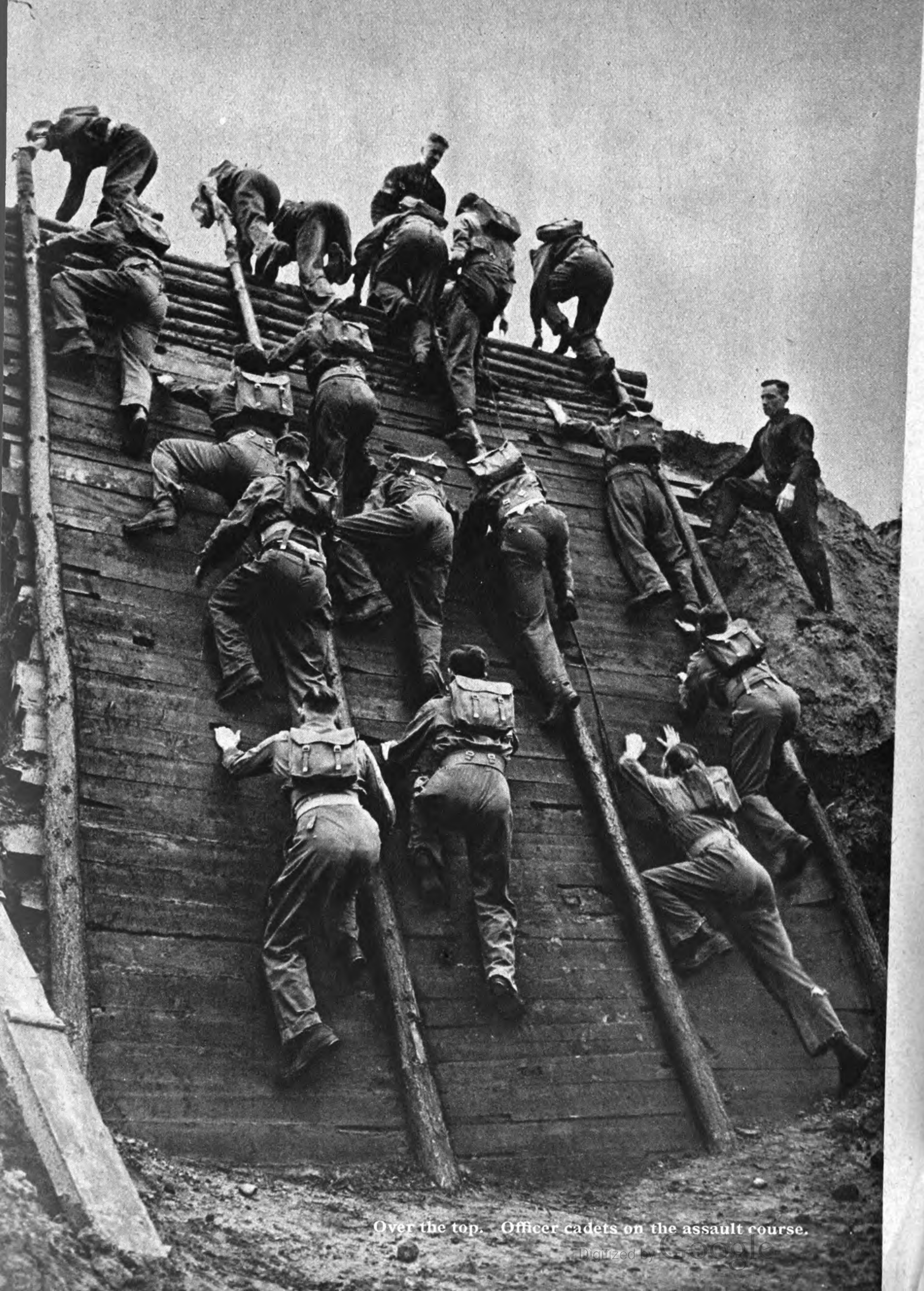
The RAC insist on a very high standard of vehicle maintenance, and this is thoughtfully and thoroughly worked out in a drill known as the "parade maintenance system." It means, in effect, a list of duties to be done at certain times and in certain conditions, so that within a given period every working part of the vehicle is overhauled and put in order. Vehicle Maintenance is, in some degree, the responsibility of every member of the tank crew. But it is on the driver that the main charge rests. If the tank "won't march" it is the driver who is finally to blame. The old cavalry men were not more careful to see that their horses could travel than are the tank drivers of the Royal Armoured Corps to keep their tanks rolling.





Top: Replacing the tank track. The driver needs the whole crew for this job.

Bottom: " Let her go down steadily." The driver takes his first water course.



Over the top. Officer cadets on the assault course.

5. Trooper into Officer

A BOMBER AIRCRAFT is worth many thousands of pounds. But it costs more precious gold than any coin—it costs thousands of irreplaceable man-hours in the factories where the machine is built, and on the airfields where the bomber crews are trained.

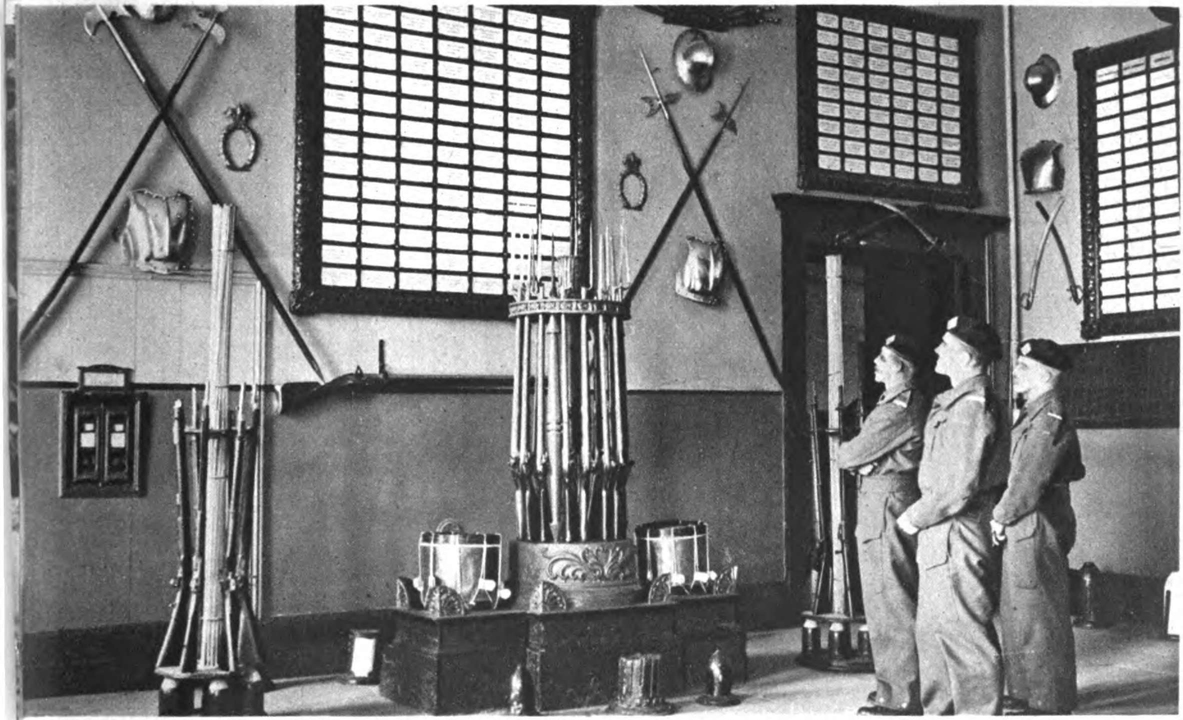
The word Pilot has become a name of splendour in the English language. It takes something to become a pilot. The Royal Air Force choose the pilots of their fighters and the captains of their bombers with immeasurable care.

A tank is worth about £15,000. A tank also costs priceless treasure in the skilled labour of the men and women who built it, and in the hard preparation of the men who fight in it. And now Tank Soldier is a title proudly borne. The Royal Armoured Corps take infinite pains to choose the right men to command their tanks. It takes something to be an RAC officer, too.

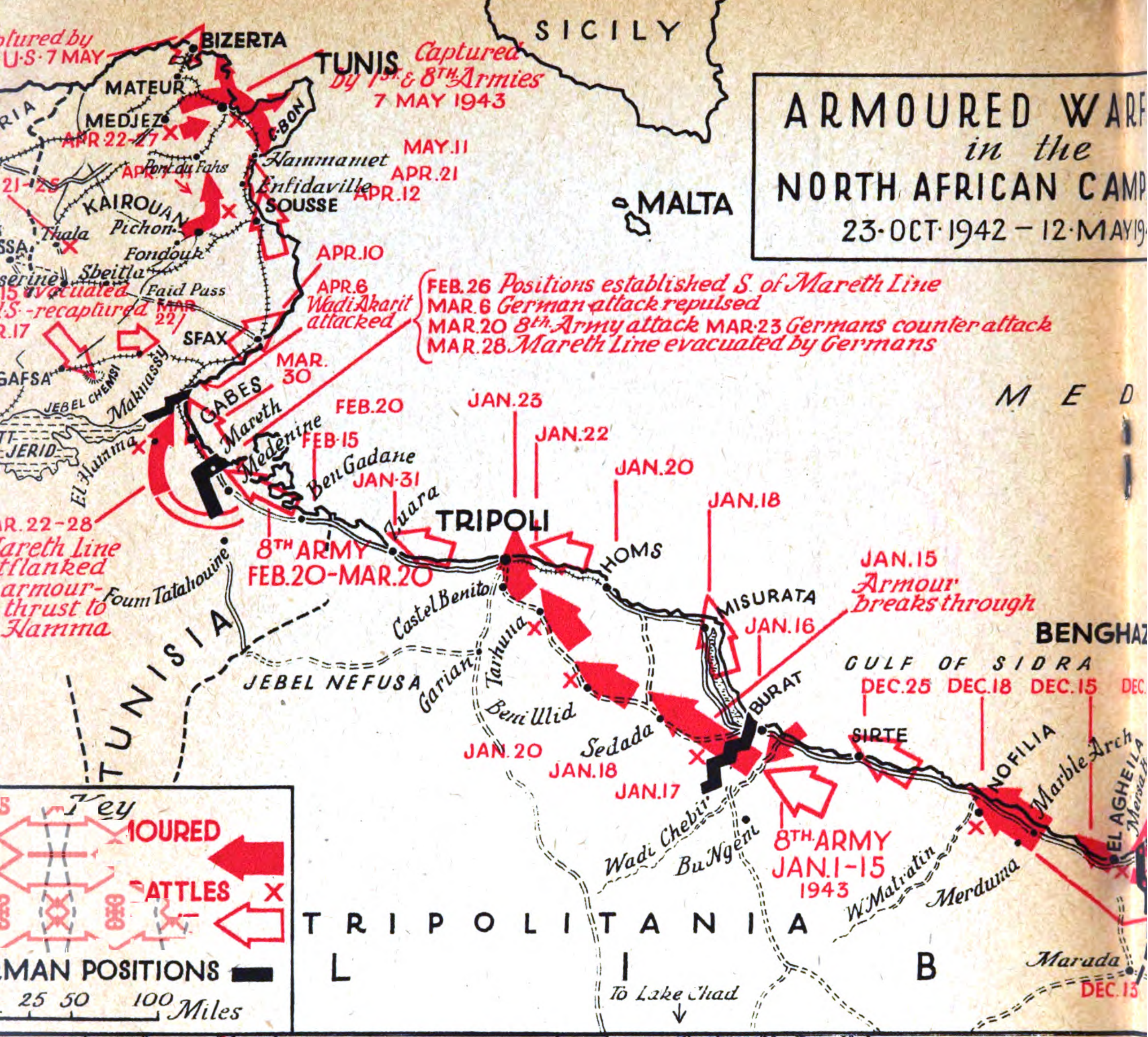
Every single soldier in the Royal Armoured Corps, whether he be trooper or potential officer, must pass through the hard mill of the Training Regiments. Each recruit, standing there on the barrack square on that first awkward parade, will have exactly the same chance as the man alongside him to become an RAC officer. Whether he does, in fact, rise from the ranks depends on him, and on himself alone. A great responsibility goes with this honour.

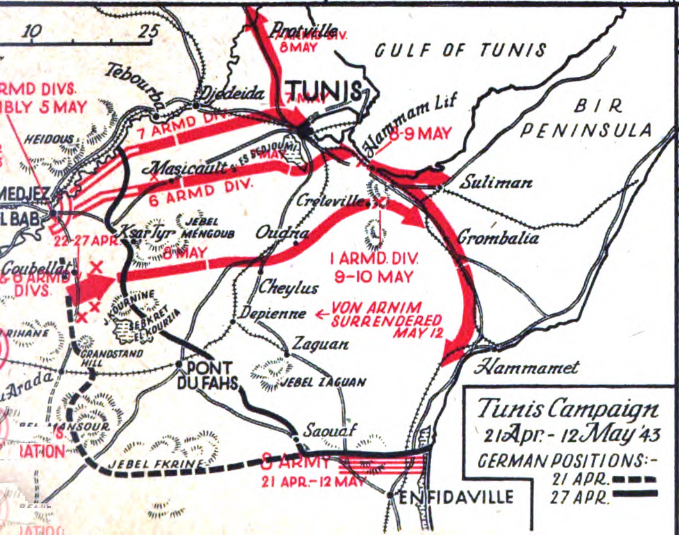
Napoleon wrote, "*There are no bad soldiers, only bad officers.*"

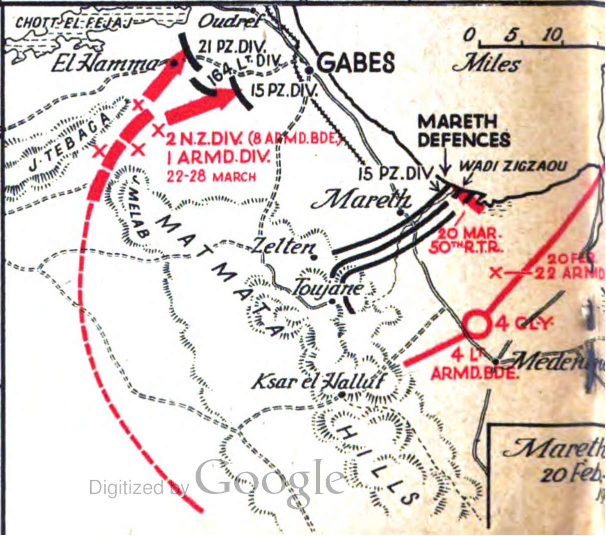
What are the qualities that the Royal Armoured Corps demands of its officers?

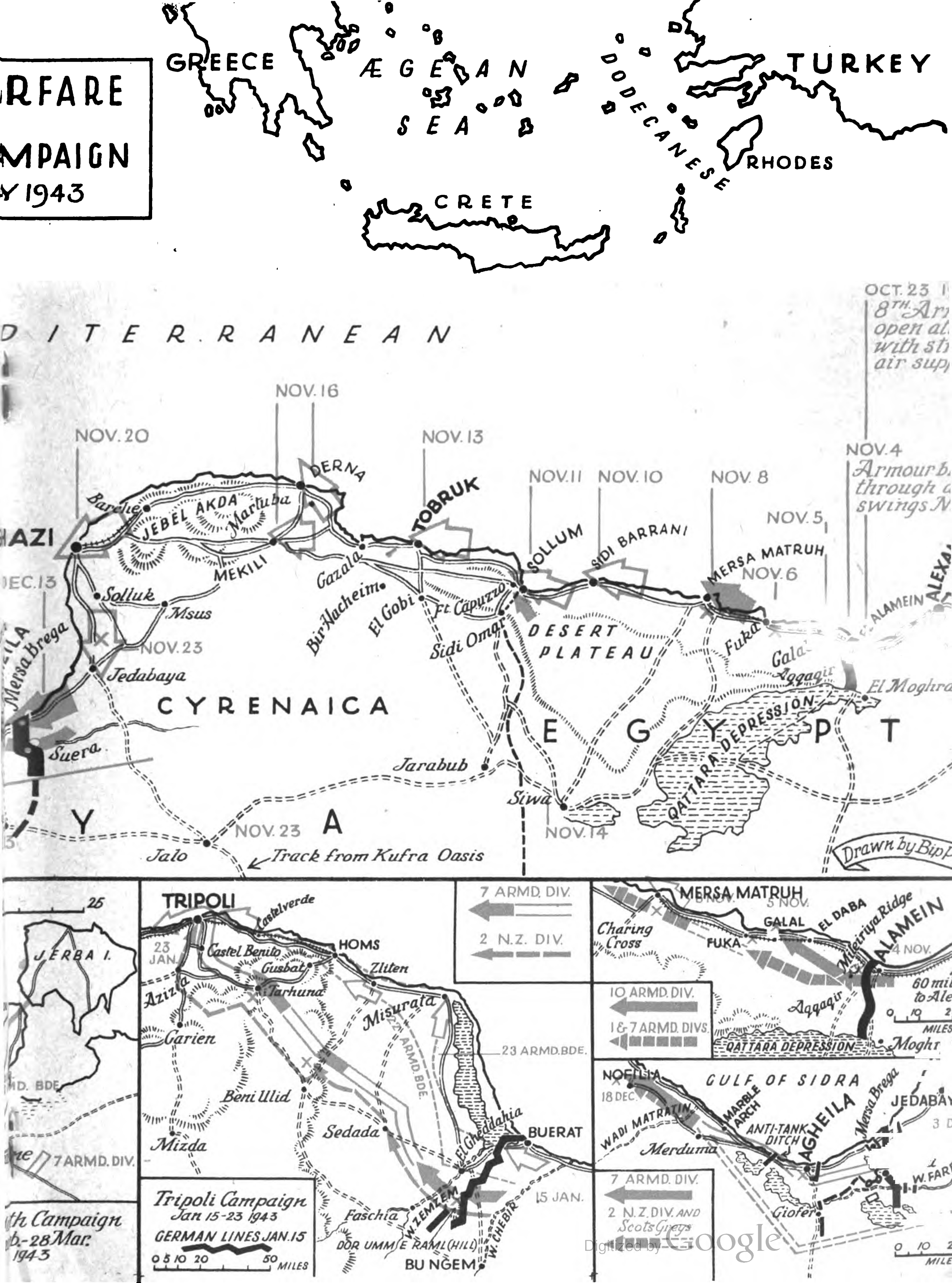


Threshold. In the main entrance hall of the Royal Military College, Sandhurst, the new officer cadets read the roll of honour of their predecessors.


ARMOURED WARF
in the
NORTH AFRICAN CAMP
23·OCT·1942 – 12·MAY19
SICILY
MALTA
BIZERTA
ptured by
U·S·7 MAY
TUNIS
Captured
by 1st & 8th Armies
7 MAY 1943
MATEUR
MEDJEZ
APR.22-27
C.BON
MAY.11
Hammamet
Pont du Fahs
APR.21
Enfidaville
APR.12
SOUSSE
KAIROUAN
Pichon
Thala
Fondouk
APR.10
Sbeitla
Faid Pass
APR.6
Wadi Akarit
attacked
MAR 22
15 evacuated
S.-recaptured
R.17
SFAX
FEB.26 Positions established S. of Mareth Line
MAR.6 German attack repulsed
MAR.20 8th Army attack MAR.23 Germans counter attack
MAR.28 Mareth Line evacuated by Germans
GAFSA
JEBEL CHEMSI
Maknassy
MAR.
30
GABES
Mareth
JEBEL
JERID
El Hamma
Medenine
FEB.20
FEB·15
Ben Gadane
JAN·31
Zuara
JAN.23
JAN.22
JAN.20
JAN.18
TRIPOLI
HOMS
R.22-28
areth Line
tflanked
armour-
thrust to
Hamma
8th ARMY
FEB.20-MAR.20
Foum Tatahouine
Castel Benito
Tarhuna
MISURATA
JAN.15
Armour
breaks through
JAN.16
BENGHAZ
GULF OF SIDRA
MED
TUNISIA
JEBEL NEFUSA
Garian
Beni Ulid
Sedada
BURAT
DEC.25
DEC.18
DEC.15
DEC
SIRTE
NOFILIA
Marble Arch
EL AGHEILA
JAN.20
JAN.18
JAN.17
Wadi Chebir
Bu Ngem
8th ARMY
JAN.1-15
1943
W. Matratin
Merduma
Key
MOURED
ATTLES
MAN POSITIONS
25 50 100 Miles
TRIPOLITANIA
L
I
B
Marada
DEC.13
To Lake Chad


Tunis Campaign
21 Apr. - 12 May '43
GERMAN POSITIONS:-
21 APR.
27 APR.
10
25
Protville
7 ARMD DIV.
8 MAY
GULF OF TUNIS
Tebourba
Djedeida
TUNIS
7 MAY
RMD DIVS.
BLY 5 MAY
HEIDOUS
7 ARMD DIV.
Hammam Lif
8-9 MAY
BIR
PENINSULA
Masicault
ES SEDJOUMI
7 MAY
Suliman
MEDJEZ
L BAB
6 ARMD DIV.
Creteville
22-27 APR.
Ksar Tyr
JEBEL
MENGOUB
Oudna
Grombalia
8 MAY
Goubellat
& 6 ARMD
DIVS.
1 ARMD. DIV.
9-10 MAY
Cheylus
J. KOURNINE
SEBKRET
EL KOURZIA
Depienne
VON ARNIM
SURRENDERED
MAY 12
RIHANE
Zaguan
GRANDSTAND
HILL
PONT
DU FAHS
Hammamet
Arada
JEBEL ZAGUAN
MANSOUR
Saouaf
RATION
JEBEL FKRINE
8 ARMY
21 APR.-12 MAY
ENFIDAVILLE


CHOTT EL FEJAJ
Oudref
0 5 10
Miles
21 PZ.DIV.
El Hamma
164 LT. DIV.
GABES
15 PZ.DIV.
J. TEBAGA
2 N.Z.DIV. (8 ARMD.BDE.)
1 ARMD.DIV.
22-28 MARCH
MARETH
DEFENCES
15 PZ.DIV.
WADI ZIGZAOU
J. MELAB
Mareth
MATMATA
20 MAR.
50th R.T.R.
Zelten
20 FEB
22 ARMD
Toujane
4 C.L.Y.
4 Lt
ARMD.BDE.
Medenine
Ksar el Hallut
HILLS
Mareth
20 Feb


RFARE
MPAIGN
Y 1943
GREECE
ÆGEAN SEA
DODECANESE
TURKEY
RHODES
CRETE
DITERRANEAN
OCT. 23
8TH Ar
open al
with st
air sup
NOV. 16
NOV. 20
NOV. 13
NOV. 11
NOV. 10
NOV. 8
NOV. 4
Armour b
through a
swings N
NOV. 5
NOV. 6
DERNA
Barce
JEBEL AKDA
Martuba
TOBRUK
HAZI
MEKILI
Gazala
SOLLUM
SIDI BARRANI
MERSA MATRUH
DEC. 13
Solluk
Msus
Bir Hacheim
El Gobi
Ft. Capuzzo
Sidi Omar
DESERT PLATEAU
Fuka
ALAMEIN
ALEXA
ILA
Mersa Brega
NOV. 23
Jedabaya
Gala
Aqqaqir
El Moghra
CYRENAICA
EGYPT
QATTARA DEPRESSION
Suera
Jarabub
Siwa
Y
A
NOV. 23
NOV. 14
Jalo
Track from Kufra Oasis
Drawn by Bip
25
JERBA I.
MD. BDE
me
7 ARMD. DIV.
th Campaign
b.-28 Mar.
1943
TRIPOLI
Castelverde
23 JAN.
Castel Benito
HOMS
Gusbat
Zliten
Aziza
Tarhuna
Misurata
Garien
22 ARMD. BDE.
23 ARMD. BDE.
Beni Ulid
Mizda
Sedada
El Gheddahia
BUERAT
15 JAN.
Faschia
W. ZEMZEM
W. CHEBIR
DOR UMM E RAML (HILL)
BU NGEM
Tripoli Campaign
Jan 15-23 1943
GERMAN LINES JAN. 15
0 5 10 20 50 MILES
7 ARMD. DIV.
2 N.Z. DIV.
MERSA MATRUH
7 NOV.
5 NOV.
Charing Cross
GALAL
FUKA
EL DABA
Miteiriya Ridge
ALAMEIN
4 NOV.
60 mil
to Ale
Aqqaqir
0 10 2
MILES
10 ARMD. DIV.
1 & 7 ARMD. DIVS.
QATTARA DEPRESSION
Moghr
NOFILIA
18 DEC.
GULF OF SIDRA
WADI MATRATIN
MARBLE ARCH
Merduma
ANTI-TANK DITCH
AGHEILA
Mersa Brega
JEDABAY
3 D
W. FAR
Giofer
7 ARMD. DIV.
2 N.Z. DIV. AND Scots Greys
0 10
MILE

First, the potential officer must be foremost among the keenest, fittest and most energetic soldiers in his own Regiment. When the candidate for a commission arrives at the Royal Military College, Sandhurst, where RAC officers are finally moulded in an intensive course, he must be 100 per cent. efficient in all his work as a fully trained RAC trooper.

Second, the potential officer should possess the power of imparting his knowledge to the men who will ultimately be serving under him. For though a teacher may not necessarily be a leader, the first rate leader is always something of a teacher.

Third, and this is the vital, absolute requirement—the potential officer must have that gift of command over other men which impels them to follow him through danger, and defeat even, to ultimate triumph. Leadership is not a single trait, but rather a complex blend of many qualities, some of them inborn, others engrained since childhood, others still trainable. They add up to that inestimable sum that makes and keeps a "happy tank," a fine regiment, and a conquering army.

How are potential officers selected and developed in the Royal Armoured Corps?

The man who appears to have these three essential qualities is generally quickly spotted by the officers in charge of his own Service or Training Regiment. His progress in every branch of his instruction is then recorded, and his general bearing also

RAC Battle Camp : a human chain crosses the torrent. In this course Officer cadets march and manœuvre night and day continuously and under fire of live ammunition.

is observed. Usually it is his Squadron leader, though it may be the trooper himself, who raises the question of a possible commission. If he is deemed suitable, his name is submitted to the Regimental Board, which consists of three or more senior officers of his regiment. If the candidate passes their scrutiny, he will appear before his Commanding Officer for an interview and some sound advice. The next hurdle is the War Office Selection Board for Officer Cadet Training Units (OCTU).

These Selection Boards are regional, and their purpose is to investigate, not the candidate's military knowledge, but rather his personal ability and character. An entire network of tests has been devised to search out this *X* quality of Leadership.

First come Intelligence Tests to probe the candidate's ability to learn, rather than his actual store of learning. Simple examples of queries are :—

> " *If* 6 *is more than* 4 *write the figure* 8 ; *if not, write* 9."
>
> " *Quick means the opposite of lame, old, fast, lazy, slow ?* "
>
> " *Which of these five words is of a different class from the rest ? Hirsute, cunning, astute, insane, obtuse.*"

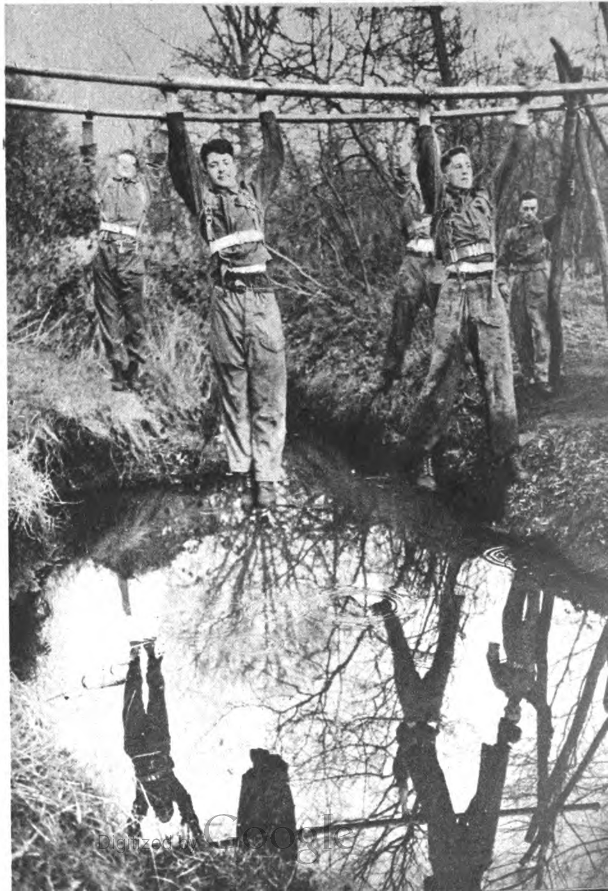
Other tests may include the pattern from which a section is missing. At the bottom of the page are half a dozen fragments, each of which would fill the gap in size and shape, but of which one alone completes the design. Or the candidate may be asked to write down whatever thought comes into his head on hearing a certain word or seeing a certain picture on a screen. Imagination, and the impact of ideas upon the brain, is being tested here.

Then the candidate may be called on to stand up before the class and deliver a three-minute address on any subject, from the Second Front to the National Debt. It is not what he says that counts, but how he marshals his facts, and the way he bears himself while doing it.

Next, since most battle actions are fought under conditions of fatigue and previous strain imposed by hard marching and little sleep, the candidates are first given a cross-country run and then set a straightforward problem in tactical handling. Promptly afterwards they are called on to go round an obstacle course designed to exercise the runner's ingenuity and dash. Team tasks follow, such as hauling a six-pounder gun across a stream or over a ravine. Finally come the personal interviews by the President and the other officers of the Board.

The candidates are attached to the Board for two or three days, and while there they are treated as officers, and live in an officers' mess. The President welcomes them in

The R.A.C. Officer must be the fittest man in his troop.



person, and every effort is made to put every man at ease. Thus, when the final conference comes to be held on the candidate's suitability as an officer, each member of the Board can offer an opinion based on personal observation.

The next stop on the journey to an RAC commission is the *pre*-OCTU camp.

Prospective cadets reach this camp not only from the ordinary RAC Service and Training Regiments, but from all other branches of the Army, including that special Training Regiment which is known as the Young Soldiers' Regiment. We shall deal fully with this important unit later.

The *pre*-OCTU camp, as its name proclaims, exists for the purpose of making officer candidates thoroughly fit for the Royal Armoured Corps OCTU itself, at the Royal Military College, Sandhurst. The *pre*-OCTU Camp is one more of those finely-meshed sieves through which to-morrow's leaders of the Royal Armoured Corps must pass.

The length of the *pre*-OCTU course largely depends on each cadet himself. The object is to bring his proficiency up to the level of a fully trained RAC trooper; he must reach this standard before he can start to learn the duties of an officer. If this standard is assured the cadet's stay at the *pre*-OCTU will be short. If not, he will remain until he has made up the leeway. There are technical courses in driving, gunnery and wireless which the cadet may pass through quickly if he is already adept.

There is plenty of drill at the *pre*-OCTU, harder PT, night marches, weapon training

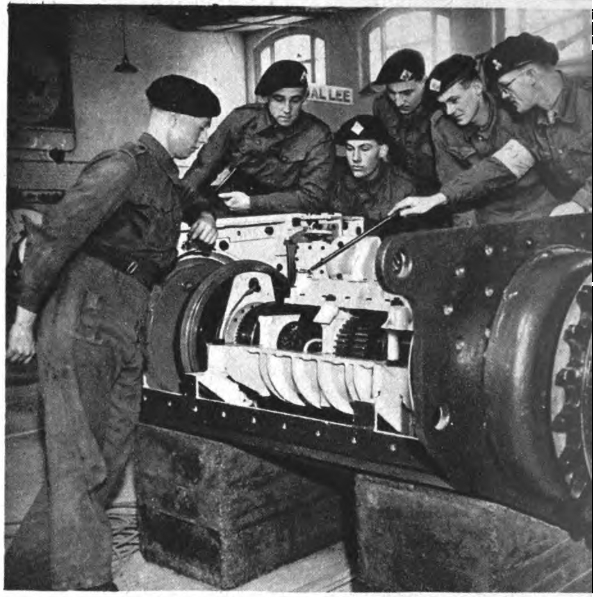
One slip and you'll fall in the river.

and guard duties. The cadets practise actual command, not only as corporals and sergeants, also as Squadron-sergeant-major and also Squadron leader. By the time they are ready to pass on to Sandhurst itself, the chances of failing there have been narrowed down to a remote fraction.

The last lap begins, the longest and the toughest of all—the OCTU course at the Royal Military College, Sandhurst. Since that other dictator, Bonaparte, was threatening to invade England 142 years ago, the Royal Military College has been producing officers for the British Army. The young cadets who trained at the Royal Military College in 1802 were the officers who led the glorious troops of Waterloo and put paid to that menace. Earl Roberts, Earl Haig, Lord Allenby, Lord Birdwood and Lord Wavell are on the roll of its Field-Marshals. Guards, Cavalry, and Infantry found their leaders in Sandhurst; it has served Britain as West Point Academy has served the United States, and, by historical coincidence, for exactly the same number of years.

All that was splendid and serviceable in the old tradition remains in Sandhurst still. Formerly it cost the cadet (or his patient parent) £400 a year to pass through the Royal Military College. To-day it costs the trooper-grown-into-officer exactly nothing, except the effort and determination which he gives back to the Royal Armoured Corps.

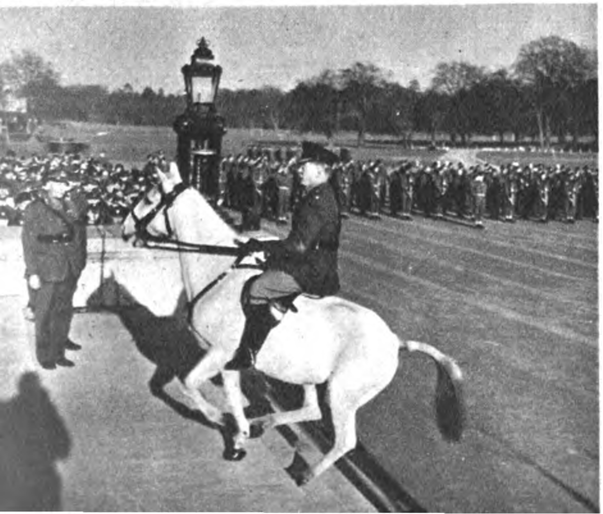
Sandhurst has grown vastly in size. The far more complex training required for tank fighting has created its inevitable series of



Top: **There is a further and more extensive wireless course at Sandhurst.**

Centre: **What makes the wheels go round? At the Driving and Maintenance Wing, they study the mechanism of a tank transmission. There are 7,000 separate parts of a tank.**

Bottom: **"Just look at yourself, sir!" N.C.O. instructor drills officer cadets before a mirror on the Square.**



technical wings, repair bays and tank parks. But Sandhurst maintains its own peculiar code, and its old peculiar customs. The field from which the potential RAC officer to-day is drawn is as wide as the entire nation. They claim with pride in the RAC that when Sandhurst has finished with him after several months' gruelling, you will not be able to say from which stratum of society came the best officer-cadet in any class.

The Commandant, who is the Soldier-headmaster of this Academy, will tell you frankly that there they recognise no "best type of pupil." Possibly, those who have left school earlier than the rest, and so have made their start in life, have the initial advantage of a certain experience. Perhaps the University man, whose education at any rate took longer, will catch up later the fellow who got off to a flying start. Often, the town-bred cadet is quicker to pick up technical detail. But the country lad, brought up in the woods and on the rivers, has probably the better natural eye for ground and tactics. The Commandant is concerned only to produce the finished product of a Leader. And his experience is that leaders fall into three simple categories:—(1) Those who lead naturally. (2) Those who can be trained into leaders. (3) Those who are capable only of leading themselves and everyone else into trouble. That third class do not emerge from Sandhurst as officers. The Commandant says calmly, and confidently, "Sandhurst cannot afford one failure."

Left Top: **Stripping, cleaning and reassembling machine guns after target practice on the ranges. The tank officer must be as workmanlike as his gunner.**

Centre: **Their OCTU training completed, a troop of officer-cadets march past the inspecting officer. The whole battalion of officer-cadets are present at the passing out parade.**

Bottom: **End of the Parade. In the time-honoured custom the Adjutant rides his horse up the steps of the Royal Military College behind the passing-out troop.**

Right: **The Inspecting Officer buckles a belt of honour on the two most proficient officer-cadets in the passing out troop. Major General Aizlewood, Inspecting Officer on this occasion, had the happy duty of awarding this distinction to his son.**

And Sandhurst takes quite extraordinary pains to ensure in fact that there shall BE no failure. The officer-cadet goes through an even more intensive—and extensive—series of courses. He is drilled by drill sergeants from the Guards. He brushes up all his former training, and learns also all about tank tactics, tank navigation, tank harbouring and the running repair of tanks wounded in battle. Drummed into every head is the imperative duty of co-operating with all other arms in march, manœuvre and battle. So the officer-cadet must study infantry and artillery formations and the role of the Air Force. Under live fire at an RAC battle school he practises approach marches and battle drills and the art of fording rivers. During this time he will seldom see a bed except under the lee of a tank. As for Sandhurst's own special PT—the pictures tell this story. Above all the officer-cadet is taught the command and management of men. Yet throughout this strenuous experience there is sympathetic and even generous care for each cadet's personal progress. Sandhurst does not WANT any of its sons to fail.

The system of marking through the course is a multiform grading in each subject. But the marks are treated only as a guide, not as an absolute criterion. What you *are*, not what you *do*, is the ultimate and decisive test. For this reason troop officers at Sandhurst live closely with their cadets in order to know them better, joining in their sports and games and dining in mess with them several times a week.

At last the Great Day arrives, the final Passing Out Parade. This is a ceremonial as splendid as any in the British Army. All of Sandhurst's historic tradition is merged in this act. The whole battalion of officer-cadets is drawn up in line beyond the green lawns, as other battalions of prospective officers have been for more than a century of glory. The band is massed on the central paved drive, known as the King's Drive, the adjutant rides across the Square to drill the parade. The drums roll. The trumpets sound. The march begins. The battalion advances on to the Square and turns in line to pass the Inspecting Officer standing on the steps of the stately white-pillared building. The squadrons turn and advance in review order to form three sides of a hollow square, with the Passing-Out Troop in the centre. Then the band plays the General Salute as the battalion presents arms to the Inspecting Officer. Accompanied by the Commandant he descends the steps. He congratulates the best officer-cadets among the Passing-Out Troop and presents them with a Sam Browne belt of honour.

Now the whole parade presents arms to its departing comrades. The deep drum throbs to the moving lilt of Auld Lang Syne. The rest of the battalion stand steady as a rock while the Passing-Out Troop march in slow time up the steps of the Old Building. They are followed, according to custom, by the Adjutant on his charger. They pass through the tall doors into the building and out of sight of their comrades on the Square, an unforgettable moment in a man's life.

These young men are no longer officer-cadets, but officers, holding the King's Commission in the Royal Armoured Corps.

6. Royal Armoured Corps

NO TWO BATTLES have ever been the same. It even seems that no two soldiers, fighting side by side, have yet seen the same battle! There is only one constant item in battles, the confusion which reigns there.

Weapons change tactics, and are changed

by them. The enemy's power, his formations, and the terrain of the battlefield are all factors which are forever fluid. The tank and the art of handling tanks, cannot escape this law of mutation. We have seen how even in the fighting in Europe the tank has changed its role, first being used to break open the enemy front for the infantry, then next being massed with other tanks as an almost independent Tank Army. The Desert, where most of our own armoured fighting has recently been waged, imposed its own special forms of battle. So once more did the Tunisian heights and gullies, and so now will the Allied invasion of Europe.

Nevertheless, within these broad limits,

Right: **The Sappers go out to clear a lane through an enemy minefield at sunset. These men are first in and sometimes last out.**

Below: **Under fire, Royal Electrical and Mechanical Engineers recovered and restored hundreds of damaged tanks. Picture shows REME'S throwing themselves to the ground to escape blast from enemy bomb.**

Second Front in Europe. Churchill tank crews practise embarking on invasion landing craft barges.

the Royal Armoured Corps have well-defined purposes to perform. A clean-cut and simple organisation has been designed, therefore, to cover all these purposes, allowing for local conditions to dictate local adjustments.

Roughly, the Royal Armoured Corps may be divided into five main categories, which correspond with the different rôles allotted to each one. In actual fighting, of course, it is not so easy to separate the tasks which may fall to any armoured unit, a fact which is having its influence on present tank design.

1. TANK BATTALION

First come the Tank Battalions of the Royal Tank Regiment and some converted infantry regiments. These are equipped with the heavy Infantry (" I ") tanks such as the Valentines, Matildas and Churchills.

The " I " tanks, working closely with the infantry, have two main functions :—(i) To break, and if possible crush, the opposing forces where they stand, and (ii) To create opportunities for the launching of Armoured Divisions against the enemy, either round his flank or through his front, thus making fresh flanks against his troops. The Tank Battalions are the heavy hammer and anvil of the assault.

2. ARMOURED REGIMENT

Next come the Armoured Regiments, of which there are many of the old Cavalry and Yeomanry regiments, as well as over half of the regular battalions of the Royal Tank Regiment. They are equipped with cruiser tanks such as Cromwells, and also with the heavier American Shermans.

An Armoured Division is made up of Armoured Brigades, Artillery, Engineers, Signallers, Motorised Infantry and the vital supply, repair and medical services of the RASC, REME, and RAMC.

The particular purpose of the Armoured Regiments is :—(i) To destroy enemy armoured formations. (ii) To dislocate and destroy enemy headquarters, communications and rear areas generally. (iii) To keep the battle fluid, and so provide possible opportunities for the action of other divisions to complete the victory.

The Armoured Division with its armoured regiments and supporting artillery, infantry and other arms, marches and fights as a self-contained unit.

3. ARMOURED RECONNAISSANCE

Third comes the Armoured Reconnaissance Regiment. Its prime purpose is to ensure the uninterrupted march or manœuvre of the Armoured Division. Armoured "Recce" provides the close reconnaissance which discovers the nature of the ground the next few miles ahead, and whether movement is likely to be affected by obstacles or enemy opposition. Armoured Recce is so organised that it can deal with opposition of moderate strength, and in certain circumstances fight for information. But its prime duty is to keep the Division fully and promptly aware of all that is going on within its area of action.

4. ARMOURED CAR REGIMENT

Fourth, is the Armoured Car Regiment.

The Armoured Car Regiment is even more far-seeing, being the "eyes, ears and nose, too," of a whole Corps. Almost its sole business is advanced reconnaissance, frequently to verify or amplify reports sent in by air tactical reconnaissance. It operates many miles ahead of the main body and far out on the flanks. Though the Armoured Car Regiment is often under fire, and sometimes has to fight to get away, its business is definitely to avoid trouble, and to get its reports back to HQ with the utmost speed. For it is generally the first close contact with the enemy, and on the precious minutes it saves may depend the effective alignment of all the troops behind it. In advance, as at Benghazi, Tripoli, and Tunis, of course, it was the armoured cars who got in first.

5. RECONNAISSANCE CORPS

The fifth is the Reconnaissance Corps, which has only recently been incorporated into the RAC. Its function is similar to that of the Armoured Reconnaissance Regiment (3), but with this difference. Whereas the Armoured "Recce" works with the Armoured Division, the Reconnaissance Corps Regiment reconnoitres in front of an Infantry division. It is well equipped with armoured cars and other wheeled vehicles and, for cross-country reconnaissance, has Carrier Sections that are heavily armoured, including 3-inch mortars and supported by anti-tank guns.

We shall see next how this varied organisation of the RAC has worked in practice on the battlefield.

His Majesty the King inspects one of his Armoured Divisions, accompanied by Lt.-General the Duke of Gloucester.

7. War in the Sand

"TANKS IN THE DESERT," said General von Ravenstein, when we captured him, " make a tactician's paradise and a quartermaster's hell." This briefly and accurately sums up the matter.

The Western Desert ; a triangle five times the size of Britain, a land of sand and scrub and stone ; a desolation without water or trees, where the wind lashes the dust of the dead earth into a blizzard that howls and drives for 70 hours ; where noonday is an oven and night an ice-box ; a manœuvre area fifteen hundred miles across, or as far as from Calais to Kiev. Such was the chosen place where the soldiers of the Royal Armoured Corps and their comrades of all arms and services gave the proud Axis armies the thrashing of their lives, the first of many thrashings.

It was the opinion of Napoleon that desert was the most formidable of all natural barriers. Mountains come second, he said, and rivers a poor third. Napoleon crossed the Alps to victory at Marengo, but the Egyptian Desert was the pathway to his first defeat. The British fought him by Suez Isthmus and beat him there 140 years ago, saving the Empire. In 1940 the Western Desert again guarded the approach to Suez, whose canal now formed the imperial sea bridge between the western and the eastern oceans.

By 1940 armies no longer marched at the foot pace of 10 miles a day. Sixty or seventy miles between dawn and dusk was an easy stride for the panzers. Once Field-Marshal Rommel halted for three months with a great army within a summer's day of Cairo.

The armies wheeled and circled about the illimitable Desert as formerly they had manœuvred within a few close fields. But the Desert still had something to exact. It takes many thousand gallons of petrol to march an armoured division a hundred miles. This means a fleet of supply trucks, and for every further hundred miles that you travel you need a proportionate increase to keep the supply chain rolling. In the great battles of the Western Desert, the British or the Axis armies were sometimes a thousand miles from their main port bases, almost always five hundred miles. The reader can work out for himself the quartermaster's problem. The Royal Army Service Corps, in fact, worked it out, and solved it brilliantly.

After those first few months when General Wavell had only 30,000 Empire troops against 300,000 Italians, the strength rose eventually to 150,000 on the Allied side. They required as a fair minimum one gallon of water per head per day, though often the soldiers managed with far less. Tanks had to be maintained and repaired, and the guns had to be fed.

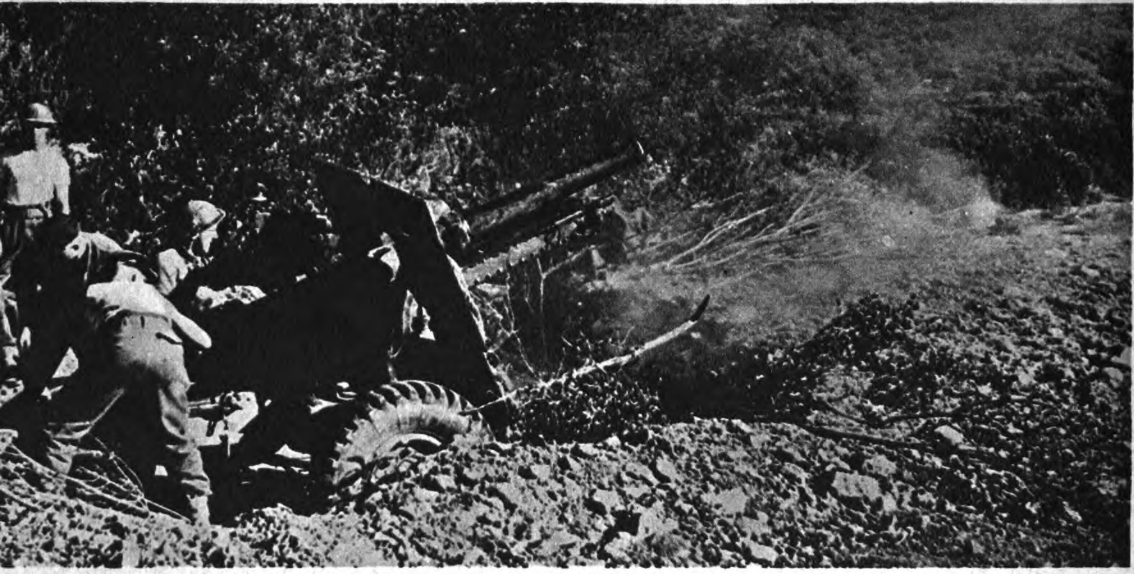
Along the coast there are some roads, and a railway goes part of the way, from Alexandria to Mersa Matruh. South of this belt there are mostly tracks ; once made, these tracks last for many years and they lead in all directions, so that you cannot know where any one will take you. Traffic must steer by the stars, or by the sun, or the compass. If it travels by night, it must go without lights, in darkness that the world has long since agreed to call Egyptian.

One Christmas Eve a Supply officer drove off from a tank unit to a Desert dump seven miles away to bring in some supplies. He left at mid-day, and when he got there he had to wait for the Supply truck to come up. It never came. He arrived back at his unit twelve hours later—without the supplies. They said, " It took a long time, didn't it ? " He replied, " It was seven miles there, and 120 miles back." A slight variation of his compass had left him utterly lost. That

Land battleship. Looking through the driver's aperture from the seat of an American General Grant tank in the desert. The big gun is 75 millimetre, deadly at 2,000 yards.

night another officer set off. He was dog tired, but he drove dead straight on his compass bearing to the dump. He got the stuff this time, and started for his squadron. Again he kept his compass bearing accurately. But after driving for half an hour in the thick darkness he felt himself lost and wisely pulled up. He woke up at daybreak about half a mile from the dump. He had driven into a bog of soft sand, and his wheels had been churning round and round, while his truck hardly moved a hundred yards.

Even in daylight sometimes the convoys move through a brown blizzard of sand,



Top: **The Motor Battalion, an indispensable component of the armoured division, comprises infantry specially organised for close co-operation with armoured units.**

Centre: **Mobile artillery is a vital part of an armoured division. Twenty-five pounder gun crews in action on Jebel Bargou Sector, Tunisian front.**

Bottom: **Nine out of ten will fight again. During the African campaign the RAMC saved thousands of lives by prompt rescue and treatment.**

The first armoured car and its crew to enter Tripoli. They are members of a famous regiment, the 11th Hussars, who won a triple crown by being the first British troops to enter Tobruk, Benghazi and Tripoli.

which swirls up into the sky in vast spirals or rushes towards you in a solid curtain. Sometimes the convoys grope their way through fog, more often through the thunderous cloud of their own dust. This stinging plague seeps into the guns, the engines, the turret-traverse, and even the wireless. The men in the Desert are never finished with cleaning their machines and weapons.

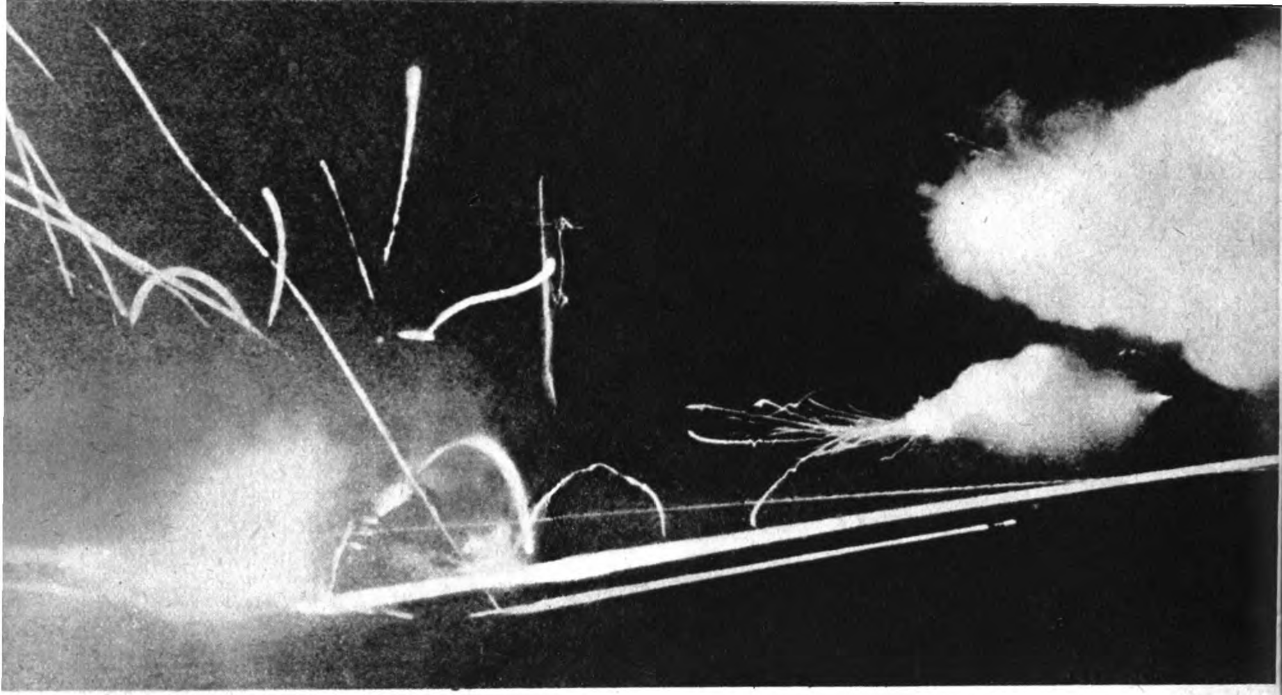
In the noonday haze or as the sun fades the mirage rises, wobbling and mocking, to bemuse you. Oncoming tanks appear to have stilts, and look rather like tall water-cisterns on an English farm. A scrubby bush assumes the shape and size of a monster van. Lakes of crystal shimmer on your horizons. When you drive your parched engines towards the water—it is sand. An RAC squadron leader, so often deceived, drove his tanks at 30 m.p.h. into a real salt lake, refusing to believe until too late that there was water there. Flies are the blackest curse; the scorpions in the bedding are, by comparison, almost allies. Bruises and scratches breaking out into desert sores are not serious, though they must be counted as afflictions. "Gippy-tummy" is the chill in the stomach which catches you if you are late in putting on your jumper when the sun drops suddenly at dusk behind the skyline.

This is the ordinary life in the Desert, before you even start fighting. The sun beats down, the south wind they call the Khamsin blows like a blast of flame, very occasionally the rain falls, and then you churn nearly hull-deep through mud. The Arab proverb says, "*To the man who knows it, the Desert is a fortress. To him who does not, it is a grave.*"

In the Desert our men lived for months on end on bully beef, biscuits and tea (interminably they brew tea), and occasional porridge and tinned fruit. The food didn't always come up, though the Royal Army Service Corps worked wonders. Said a South African Negro soldier, "We gets exactly the same rations as the Base—except we don't perpetually get 'em." Troops in the field were allotted a half-pint can of beer once a week; they received it only if they were lucky enough to be in touch with a supply echelon or a dump.

Plainly, it wasn't always possible to keep in touch, when the RAC armoured cars move in a reconnaissance screen a hundred miles ahead of the tank masses, and the Long Range Desert Groups penetrate a thousand miles deep into the heart of the enemy land. These LRD groups reconnoitre, and report by wireless; they fought the Axis patrols, seized the Axis desert forts, brought home prisoners and captured guns. They used to take with them their iron rations, of course, but often they had to rely on the country to keep them going—and they had indeed to "keep going" to skim much sustenance off that barren land.

This was the battlefield on which the Royal Armoured Corps was first called



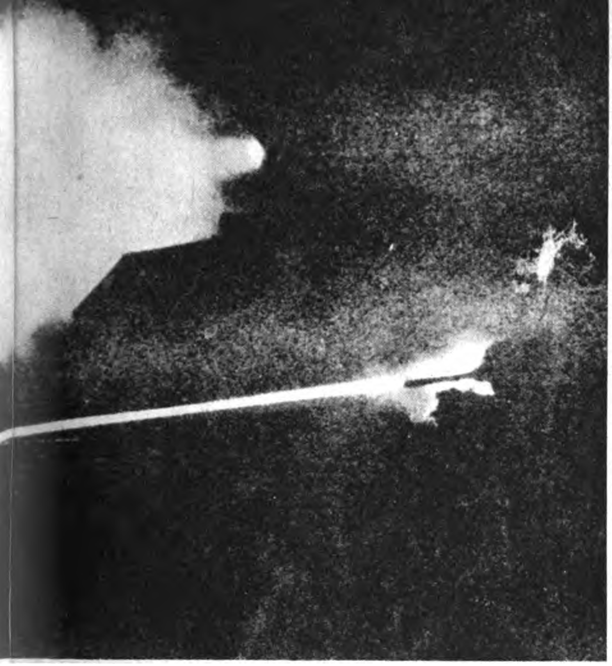
Above: **Battle Light. Tank battles are not often fought in darkness. But in the Soviet-Nazi tank duel tracer shells light up the targets. The ricochets are easily seen, so are the vulnerable direct hits.**

Below: **Advance! Flag signalling was much used by Crew Commanders in the African campaign.**

upon to fight four years ago. What was the order of battle when the opening shots were fired? Into the north-eastern corner of this vast scorching pan had been poured a tiny British force, covering Suez. Facing them, in Libya, the Italians had gathered an army ten-fold more numerous in men and with twenty times the gun-power. The Axis sea-supply lines were a few hundred miles; our own communications reached round the Cape of Good Hope to Britain, 12,000 miles away. The massive dangers of this situation imposed the need for taking even more tremendous risks.

The British game was to keep moving and never to get pinned down by the immensely superior enemy. We began by breaking through the 400-mile barbed wire fence that marked the Italian boundary. British armoured car patrols darted forward and opened a campaign of reconnaissance, raiding and harrying that deranged and delayed the Italian advance until mid-September, 1940.

When the Italians, slowly pushing forward, built themselves at night "leaguers," or



temporary fortified camps (described later), the British gunners dragged up their pieces in the dark and, having blasted half the "leaguer," hitched up the artillery and disappeared again into the night. Meanwhile, groups of two or three armoured cars ranged the Desert far south and west. The moral ascendancy gained by these guerrilla cavalry was a vital part of the strength which General Wavell deployed when he struck the Italian main power, massed in the chain of fortified camps south of Sidi Barrani, early in December, 1940.

Wavell's frontier battles and his successive strokes against Sollum, Capuzzo, Bardia and Tobruk have been described elsewhere, and so has the story of the pursuit to Benghazi. We are concerned here only to mark the moving pattern of this Desert fighting.

In the first onset on the Italian camps the tanks both led the assault and accompanied the infantry. Once through the perimeter of the camps, the tanks rushed on to destroy the rear and encircle the retreating enemy. Though Wavell's campaign was really more an operation of motorised troops than of tanks, after the Italian evacuation of Benghazi tanks led an armoured force in a 150-mile dash straight across the desert to intercept the flying enemy. Pressing on through a blinding sand storm, they caught him at Beda Fomm and destroyed him utterly. In the Second Battle of Libya (November, 1941), General Auchinleck, seeking to provoke Rommel to an armoured clash, advanced upon the enemy's tanks with a cruiser force in a wide flanking drive from the south. At the same time his Infantry tanks frontally assaulted Rommel's main entrenchments further north. Rommel received a severe hammering, but he slipped away to El Agheila to come back and fight another day.

In the Third Battle of Libya (June, 1942) it was Rommel who attacked. He moved two panzer divisions swiftly round south of the British minefield and, coming up inside it, threatened both our unarmoured troops and rear. He was met in head-on collision by two British Armoured Divisions, who sought to pin him against the mines. After ten days' ferocious fighting, Rommel broke open a gap through our minefield on the west, cleared out his wounded tanks, and brought up new armour. Rommel had the best of that argument (for one thing he had a better gun), and this time the British did the withdrawing. In those days RAC field commanders were sometimes criticised for what was called the "Death or Glory" cavalry charge. Since the German 88-millimetre outranged the British 2-pounder at battle range by 700 yards, however, it was imperative to "charge" in order to come to grips with him. We shall see what happened when a new weapon came on the scene.

In the fourth great battle of the Desert War, the Battle of Egypt, not only had the RAC received 6-pounder guns for their Crusader tanks and the reinforcement of the admirable American Shermans with their 75-millimetre guns, but also for the artillery men a mass of 25-pounders and

Tank v Stuka. A heavy bomb explodes under the nose of an advancing Crusader.

6-pounder anti-tank guns had reached the front, then securely anchored between the sea and the Quattara Depression. These factors called for a different handling of our armoured forces. So this time, instead of being themselves the Assault Force, the tanks were given two other tasks, (1) close support of the infantry assault, (2) exploitation of the break-through.

General Alexander opened the Battle of El Alamein with a gigantic artillery barrage. (For many days previously the RAF had bombed the Axis lines and all approaches.) Now, under the cover of the guns the sappers went forward and cleared the mines. Then the infantry advanced, the tanks closely following to beat back the counter-attack, and to break down strong-points that defied the assaulting waves.

After nine days' close and savage struggle, the battle rose to its final pitch in the terrible tank clash at El Aqqaqir. While British Armoured units raided deep into the enemy rear, the massed British tanks moved against Rommel's armour south of El Aqqaqir and there, in dust and flame all day, they fought it out. By night the field was littered with three-quarters of the Axis tanks, and long into the darkness terrible duels continued. Next day the entire British armoured power poured through the shattered front, and the pursuit to Tripoli began.

Several times the enemy stood and fought, but always within a few hours the Great Trek was resumed. After forty days and nights of journeying, Rommel came to El Agheila, where twice before the tide of desert war had turned. The Eighth Army made ready for another Alamein. But though armoured battles followed, the German commander kept the main body of his troops disengaged and in retreat. On New Year's Day, 1943, the 7th Armoured Division and the New Zealanders (8th Armoured Brigade), left-flanking the position at Wadi Chebir, advanced boldly and directly across the sand towards Tripoli. Its armoured cars entered the town three weeks later.

Mareth, the triple defence zone beyond the Tunisian border, was General Alexander's next objective. It was also Rommel's last fixed foothold. If Southern Tunisia was to be held, it must be here, for otherwise the lines of advance of the Eighth Army and of

Honours to the Tank ! The crew were unscathed, the Crusader swept on !

the First Army (who, with the Americans, had meanwhile invaded Tunisia from the west) were due to meet about the middle of the country. In February, therefore, while the Eighth Army was still grouping against the Mareth Line, the Germans struck at this gathering threat from the west. The Americans were forced out of Gafsa and finally back through the Kasserine Pass. It required much hard fighting to regain these positions. But the Americans recovered the initiative, and once more menaced the communications of the Mareth garrison.

Now General Montgomery launched his assault on the northern sector of the Mareth Line. As at El Alamein, a violent air and artillery bombardment provided the opening symphony of fire. Then the infantry went in, but this was the time of the heavy rains, and they found themselves fighting in mud. There was great difficulty in getting either guns or armour up in close support. As the battle settled down to ding-dong hammering Montgomery switched the 1st Armoured Division and the New Zealanders to the left flank to make a decisive encircling march on to the enemy's rear. When the Eighth Army patrols reached El Hamma the Mareth garrison faced the alternative of evacuation or annihilation. Soon the entire Axis army was retreating again. At Wadi Akarit its last attempt to stem the rising flood was overwhelmed. The next day the Eighth Army joined hands with the 2nd United States Corps at Jebel Chemsi.

The Last Phase opened. The day after the junction of the Allied forces, the 6th Armoured Division led units of the First Army eastward through the Fondouk Gap. It swung north then to conform with the Eighth Army advancing from the south. The enemy rearguards still fought tenaciously, but Tunis was now encircled in a closing ring.

Three British armoured divisions took part in the final drive. The 7th, which had been transferred to the First Army, moved direct on Tunis, which it reached ahead of anyone else on May 7th. It wheeled northwards at once, and was heading for Bizerta when the news came that the garrison had surrendered to the Americans. The 6th Armoured Division, also with the First Army, advanced along a parallel line below the city, breaking away to the south then to cut off the Bon peninsula. The 1st Armoured Division fought its way forward still further south in the last armoured battles of the African campaign. A few hours later, the German Commander-in-Chief, Von Arnim, surrendered to the 4th Indian Division.

That night General Alexander sent his memorable despatch to the Prime Minister. " Sir,—It is my duty to report that the Tunisian campaign is over. All enemy resistance has ceased. We are masters of the North African shore."

8. The Changing Shape of Tank War

WE MARCHED FROM CAIRO to the tip of Tunis. Most of the way we fought. Some of it we fought five times over, twice retiring and three times advancing. Sometimes we were equal in power with the enemy. At first, we were desperately weak ; in the end overwhelmingly strong. Our armies moved across desert into mountain land, then into a garden, finally into streets and public squares. Each was a different battlefield.

As long as the fighting was in the desert it remained a self-evident proposition that it was better to destroy the enemy's forces than to occupy his territory. What did another thousand square miles of sand count, anyway ? Thus Field - Marshal Wavell's achievement had not been the original capture of Benghazi, 1,400 miles from his starting line, but the shattering of an Italian army of 300,000 men. Later, when the Italians were suddenly reinforced by the German Afrika Corps, Wavell had promptly and properly decided not to offer battle with his exhausted troops and damaged armour at the end of a supply line which now reached back to Cairo. He withdrew. No vital threat to Suez arose for another fifteen months.

Armoured warfare in the desert has been described as " a naval battle in landships." In a sense it was true ; for the massed squadrons of the Royal Armoured Corps, with their screen of armoured cars ahead and on flank, moved as a fleet moves with its destroyers covering the battleships. The tank's area of manœuvre is wide, and—in the desert—almost as unrestricted as the sea. In actual battle, both the Armoured Division and the Fleet fought similarly, constantly changing position. The Armoured Division even " anchored " as a fleet does, when it went at night into " close leaguer."

But here the resemblance ends. The armoured fighting vehicle is infinitely more tied down to its supply than any vessel. HM ships can stay at sea for months on end. But a tank, after a very short time away from its base or its replenishment echelon, becomes a stranded whale. The tank can carry neither petrol, ammunition, food nor water enough to range for more than a couple of hundred miles, or for more than a couple of days. It is this rigid physical limitation which finally breaks down the apparent resemblance between the warships and the landships.

Experience has, moreover, shown that the idea of tank fighting tank in a roving duel, as battleships fight, is expensive and indecisive. Instead, the desert commanders sought to concentrate superior numbers and fire power, and to add to it air attack and artillery barrage. They also developed an effective mine clearing apparatus, the equivalent of naval mine sweeping. Only thus equipped could they afford to seek out the enemy's armour and force battle upon it.

The gun, the mine, the mud—and, later,

in Tunisia, the mountain—were the chief enemies of the tank. The German artillery corps has always been respected, and it was skilfully used in North Africa. The concealed anti-tank gun gave us endless trouble. Towards the end, as the British power mounted, we ourselves built a moving wall of guns. The anti-tank mine, which started life as a nuisance, grew into a formidable barrier to everything on wheels or tracks. When the fighting reached Tunisia and the rains came, the black, rich soil became glue, bogging down all vehicles. The vegetation, and, above all, the mountains, afforded greater cover to the defenders and made the going still harder for the tanks. In the desert, once the forward screen of mines, artillery and anti-tank guns had been passed or turned, the whole battle became fluid. In Tunisia, we had to fight our way forward from one rock and concrete gun-pit to another position. Especially the command of heights became supremely important.

The enemy had another advantage until near the end of the campaign: he held ready-made airfields while we had to build ours as we advanced. It greatly offset our superiority in aircraft numbers.

Speed, in marching and striking, was the all-conquering weapon which Alexander used. Blitz attack followed direct upon the battle of manœuvre, and caught the enemy napping. His strong defence system was overwhelmed by the sudden, swift, tremendous blow. The German Command was stunned.

Did the Desert War produce any strange new forms of tank marching and manœuvre? Yes, there was a unique feature, one of the oddest, and really one of the oldest in war, which the Desert revived from out of the dusty annals of the Roman legions. This was the "leaguer"—what the Boers used to call the "laager," or pitched camp of their ox-wagons. It had disappeared from the European battlefield for many centuries. In the Desert War all the armies used it.

The leaguer is the pitched-camp of the armoured formations. It usually consists of the squadrons of a regiment drawn up in parallel columns, with their "soft-skinned" transport all safely parked inside the lines, and Headquarters Squadron in the centre. The tanks in the two flanking columns have their guns swung outwards to meet any sudden night attack. The other tanks have their guns trained straight ahead. The rear of the leaguer is protected by a line of anti-tank guns. The rest of the artillery is disposed inside the camp. At the corners, and in a protective ring all round, are the infantry sentries with field telephones to HQ. The tanks are as near together as 30 paces when in "close leaguer." The shape of the leaguer when it is finally formed may not always be rectangular; some are formed in triangles and others in circles.

Infantry are another essential part of every Armoured Division. Over long distances they are motor borne, but in the forward area they march and fight on foot.

When an armoured formation is on the march and night is falling, the order is given, "Form Close Leaguer!" At once the tanks begin to edge in. The mobile guns move up on the right, but inside the outermost column of tanks. In the murk another column comes looming up; it is "B" echelon, the transport with petrol, oil, ammunition and food. Perhaps it also brings fitters, doctors, and even rum. The mass rolls on through the night. The gently-booming engines and the creak of tracks fills the dark icy air, sometimes a star shell lights it. In the tanks driver and crew commander are straining to see ahead. The gunner and wireless operator doze a little at their stations. Their job is done for the moment. Suddenly, "Halt!" The Leaguer is made.

The night is as black as a bag. No lights are allowed in leaguer. Enemy bombers might spot them, and the dense packed tank park would be a sitting target. But each crew commander must now ascertain his petrol and oil requirements; the gunner must shake off his weariness, strip and clean his guns, and note how his ammunition stands. The engines must be maintained, the turret cleared of empty shell cases, the wireless put in trim. The crew commander must get his orders from Squadron or Regiment. Before any man of the crew sleeps, the tank will be absolutely ready for to-morrow's job. So the trooper of the old cavalry regiments cared for his horse before he looked after himself.

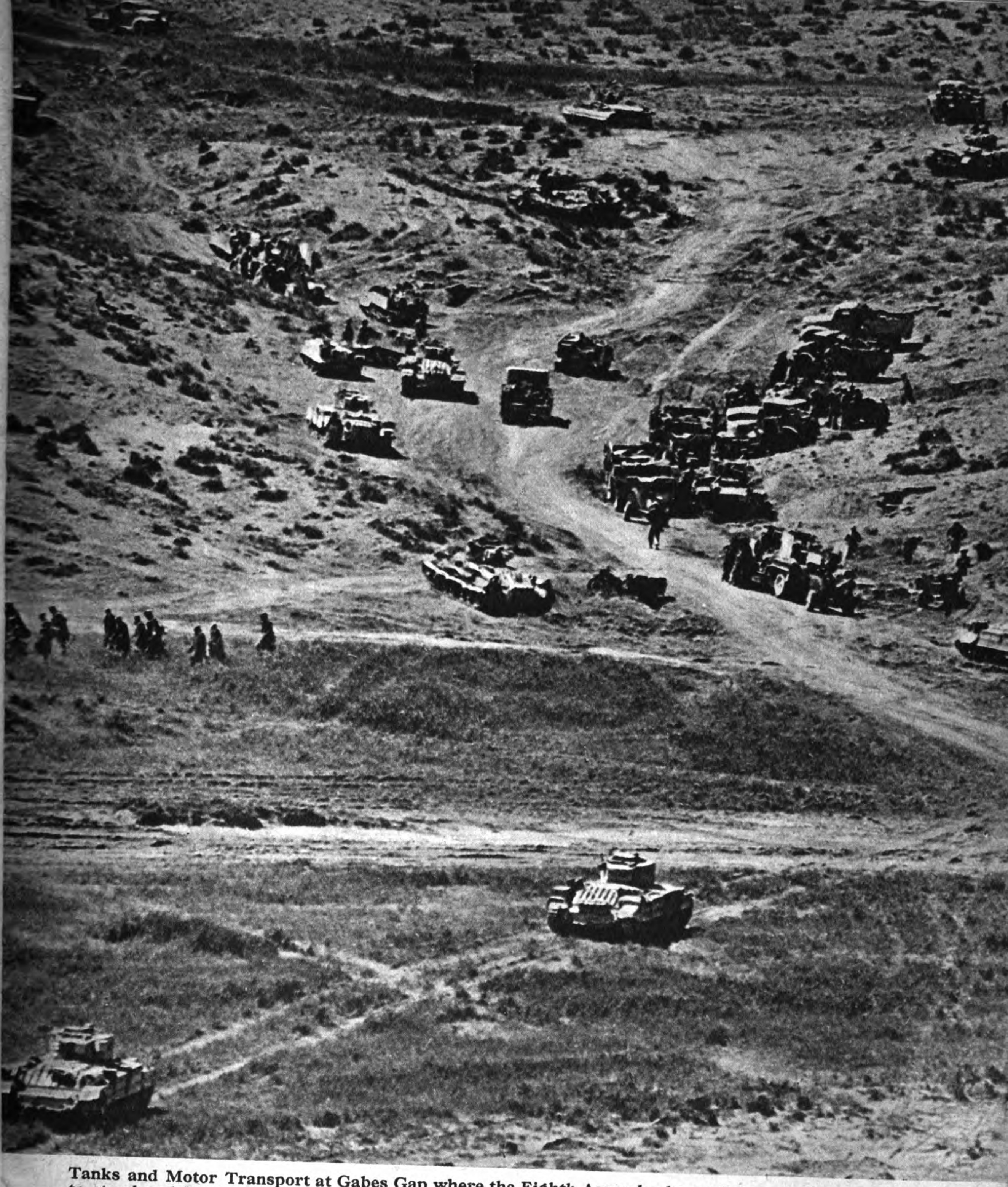
The supply lorries move along the dark lines, dumping their ordered loads. They have followed the tanks all day, being dive-bombed, shelled, and machine gunned—and they have no armour. The petrol is poured into the tanks, and the oil. The ammunition is stowed, and rations drawn. One thing more—guard. Each member of the crew must do his turn, about an hour. Only five hours are left till waking time. Load the guns, and cock them! Heave the rolled tarpaulins off the tanks, lay the blankets inside them, and fold the lot up; crawl inside and try to get warm—and sleep! No talking after the jobs are done; for no unnecessary noise, either, is allowed in leaguer. The enemy lurks everywhere in the Desert, watching, listening.

Sometimes the leaguer is bombed, or shelled, or otherwise caught napping. Sometimes the leaguer surprises the enemy. A Dragoon officer tells how a German panzer column passed in the thick darkness of a Libyan night within two hundred yards of the leaguer where his unit lay. They heard the panzers clanking along the track towards them, and silently made ready to greet them. But the column just missed the leaguer, so narrowly that they felt they could almost touch the nearest vehicles. Then, by an astonishing freak, the panzers turned at right angles and proceeded across the very nose of the leaguer. A few minutes later came a laggard truck with some Italians. They heard their panzers moving away somewhere on the flank, and decided to drive directly towards them. Their "short cut" took them straight into the British leaguer, where an officer and a corporal arrested them without any fuss.

Generally, however, the enemy will also be in leaguer for the night. If you have made contact with him, he may be only a mile or so away. Perhaps the two armoured formations have been fighting each other all day. The desert night falls like a sword, and the action is broken off. Both mighty iron fleets withdraw to lick their wounds and rest almost within hail of one another.

Dawn comes probing at the night. The leaguer stirs and wakes. "Crews Mount!" "Drivers! Start up!" "Open Leaguer! Advance!" The camp spreads out across the desert, for the bombers may be over any moment now, and dispersal is the best of all defences. Over there, beyond the ridge, the enemy is breaking camp, too.

The tanks are moving up to battle.



Tanks and Motor Transport at Gabes Gap where the Eighth Army broke up Rommel's attempt to stand and fight. Figures on the left are prisoners being marched away.

Churchills sweep forward in pursuit of Rommel

9. Into Battle

WHAT DOES IT FEEL LIKE to take part in a tank battle in the Desert?

These are voices of Royal Armoured Corps soldiers who fought in the Eighth Army. Capt. A. R. Smith, of the County of London Yeomanry, speaks, taking on the story where we left it in the last chapter, as the tanks rolled up to battle.

" It is morning, and the leaguer is on the move. The armoured cars out on the far flank and the infantry patrols up on the ridge have passed the word that means the enemy are marching. A pale green light breaks eastward. The tanks are crawling up towards a commanding position on the ridge. It is hellishly cold."

" Now we are shaping ourselves into position, fitting in according to the ground. The engines are switched off, the wireless is left on, and we wait. We hear men shouting, rather like dogs bark at daybreak from neighbouring farms in England. One of our chaps is brewing tea with petrol in a hole in a little sand dell. Beyond the ridge stretches a plateau of brown pebbles; the enemy is three miles away, down below the escarpment, and his patrols are sure to be watching us. We have breakfast—tea, bacon and fried bread. The sun is climbing fast, and it's getting hotter. The wireless begins to put us in the picture of the shape of the coming battle, and on my map I am scrawling mystic circles and arrows of other people's movements.

" My crew are smoking, and I am sitting on the turret listening to the signals, when suddenly they come screaming down towards us—the Stukas. You can't see them yet; they are still in the sun. It is our field batteries they are after, not us. There they go, dropping like stones one after another; there must be 50 of them. The small arms fire and the Ack-Ack are terrific. The bombs come twirling down, nasty black eggs spurting fountains of orange and black. Debris patters round about the tank—and then, just as suddenly as they came, the Stukas are flying off westward. They will come back again and again later on, though the Hurricanes will get in among them. If they don't plant a bomb dead in our turret hatch, nobody in this crew will worry. It is when the Stukas get knocked down out of the sky themselves that you wonder where the bits will fall.

" ' Squadron advance ! ' We are going in while the sun is still behind us in the east. Jerry likes to put off the show until evening, when the westering sun will be in *our* eyes. At present, as between us in the matter of ground there is very little to choose. I give my orders through IC (inter-communication between the members of the crew). I try to paint the picture of what the wireless has told me, and what I can see for myself. Hallo ! Here we go ! And here, 800 yards away, comes my first target, a Mark IV tank. ' 75 ! Traverse Left ! On ! FIRE ! ' Missed. A huge spurt of sand shoots up just to the left of him. ' Correction ! Right ! FIRE ! ' Flame comes up out of the German as he slews round and stops, his gun silent.

" But the German has comrades. Heavy solid stuff is screaming past our tank, making a noise like a hacksaw on steel as we lumber on. Something hits us on the side. A glancing blow, but hot oil from the power-traverse is running down my leg. I suppose it *is* oil ? The field is fogged up with smoke, and the smell of ammo fumes is sickening. The gunner is still firing, and so are the Jerry gunners. Right by our side one of our tanks is blazing, with the crew baling out into the machine-gun fire . . . an enemy tank is waddling round and round also in flames, but with no guns working, all her crew dead, I suppose, but with a still living engine . . . the din is indescribable.

" A bang like a bursting bottle. We're hit. The radio is smashed, the operator falls forward dead. I kneel on the floor of the turret and yell through to the hull ' everyone OK. ? ' Everyone is OK. Another tremendous thud, and this time the engine dies. The tank is wrecked and the petrol is running loose . . . the turret is filled with a thick black smoke, but there is a more terrible light of flames outside. Bale out ! Our war in *this* tank is over."

Often the battle was broken off at noon because the heat, and above all the haze, made it impossible to go on. Then the two opposing tank fleets would withdraw a mile or so, and remain there for two or three hours. The crews got out and brewed their tea, smoke, and slept, posting a guard to watch the enemy movements. Rarely did either side break this unofficial siesta, for accurate fire was impossible when every target was distorted and obscured.

In the late afternoon the fighting was resumed. It went on till darkness drew the curtain on the battlefield.

Here are other witnesses from the battle-field, telling of other days of fighting. Major Ling, Royal Tank Regiment, commanding a unit of heavy Matilda " I " tanks, speaks :

" Enemy guns range on us and all the time we keep on the move. Enemy tanks

A linesman of the Royal Corps of Signals tries out a pair of captured Italian claw climbers for pole climbing.

Burning Out. German Mark III Special tank destroyed during the headlong retreat of the remnants of Rommel's Army.

try to attack, but, recognising we are Matildas, they sheer off, for they have a great respect for the toughness of our armour. Occasionally, one of our tanks is hit with a huge crack and a billowing of smoke. Sometimes it is able to retire under its own steam, sometimes the survivors of the crew scramble out and run back for shelter as enemy machine-guns open up on them. So the battle day passes, tanks going back as they require replenishment of ammunition until evening, which is usually the most dangerous time. Time passes very quickly, and only at about 7.30, when darkness comes, you begin to realise how tired you are. You are glad to go to leaguer then, though each night it is with rather fewer tanks. At the end of a fortnight we all have beards and completely black faces, only set off by the red rims of our eyes.

"One day we attacked an extremely strongly-held enemy position. Some of our tanks went before the infantry and others came along with them. I was with the infantry, and we cruised along quite smoothly with a very heavy artillery barrage over us. As I moved out to the battlefield I could see the leading tanks opening fire on the enemy anti-tank guns, which were firing back. I could not find any targets, excepting one of our own Matildas which had been knocked out the previous day, and was now being used as an armoured pill-box by the Germans We very quickly dealt with him.

"By now the leading tanks were well ahead, and through the enemy defences. Suddenly the air burst into life, and we seemed to be fired on by anti-tank guns from all directions, and at very close range. I gave the order to turn left and speed up to the line to make the enemy's aim more difficult. We were then so close to his guns that I decided our best chance was to run them over at top speed. We charged straight at them and smashed over them, our machine-guns pouring lead into them the whole time. Those Jerry gunners were very brave. In every case when some of their crews were mown down by our machine-guns, the remainder carried on until there was one left, and even he would continue with a now far more slowly-firing gun.

"All of us had been hit many times. I had heard the shells smacking and boring into my turret with a frightful crack time and again. After the action I counted the hits, and there were 25 altogether, all received in the space of about three minutes.

"We had seen no infantry, and I was thinking that there were none, when one of my tanks reported that he was crossing a line of trenches full of Germans crouching on the bottom. They get right down and let the tanks pass over them, then pop up again with their machine-guns when our infantry appear. I told my tanks to shoot them up, but it was soon obvious that we could not depress our machine-guns enough to get at them in their trenches. There was only one thing to do, and that was to run over them. I started, and soon the others followed, by running along the length of the trench with one track actually in it. I could see the terrified Germans quite clearly through my periscope, crouching low until the last minute, obviously hoping against hope that we were not coming for them, and then, when it was obvious that we were, scrambling out—but too late."

Major Dance, The Queen's Bays, 2nd Dragoon Guards, speaks :

"I fought at El Alamein in a British Crusader tank. The Germans were well dug in, they had plenty of tanks and plenty of big anti-tank guns (88 mm.), and they were watching us closely. We did not just dash at them and hope for the best: we prepared most carefully and thoroughly beforehand.

"We made plans of the German minefields way back behind our own lines, and we practised finding our way through the gaps we were going to make. We got used to the signposts the Military Police were going to put there as soon as the sappers had lifted the mines. White tapes laid on the ground guided us up to the signposts. These signposts were ingenious, and simple. There were three or four patterns, say, sun, moon, stars, etc. Round discs, crescents and diamond shapes were cut out of old petrol tins and stuck on posts to guide you by day. By night, the petrol tins from which they had been been cut were lit up by placing a candle or wick inside it so that the light shone forth in the same shape as the daylight patterns. The units were given their orders—'sun route,' 'moon route,' 'star route,' and by day or night they simply followed these signposts through a minefield 15 miles deep.

"We were so well prepared and trained that every person in the regiment knew exactly what he had to do. Up to then we had done our practice at night and our other training during the day, and kept at it for several weeks, working night and day to get everything just right. On the day before the battle, we were so confident of everything being right that we went down to the sea and had a bathe.

"Then came the attack. There were 400

In addition to magnificent air support the RAF gave valuable co-operation on the ground. A cruiser tank refills from a Bowser (petrol supply truck) in the desert.

guns on our front alone; they were packed tightly together, miraculously camouflaged, and at about 1 o'clock the whole of our front lit up as the guns started. It was like Coronation Night. The sky was illuminated continuously by the white flashes from the guns, and we could hear shells screaming over and exploding amongst the German positions. The whole ground shook for miles around. Under this barrage the Sappers went forward, though we could not see them; they lifted the mines, disconnected the booby traps, and the Field Police went and put down the signs to mark our way through. At about 4 o'clock in the morning we passed through the first enemy minefield.

" In spite of all our care, three tanks were blown up by mines in the dark, but the rest got through under heavy shell fire from the Germans. We had some of the 51st Highland Division with us, and some Australians, and the first day was a ding dong battle, killing off the Boche infantry, wiping out their anti-tank guns. Then out would come their tanks, and by 5 o'clock in the afternoon my people alone had smashed ten enemy tanks. Then forward again, through another minefield, pressing on until we struck a lot of 88 mm. anti tank guns. We had to be very careful with these, because their shells would hit our tanks at ranges at which we could hardly see them. Sometimes we could not see them at all if they were well dug in. Some of us got to the sides of them, dodged in and out to put them off, machine-gunned the crews, and drove over the guns to put them completely out. German tanks then came roaring in from behind the anti-tank guns, and we waded into them. By dark we had smashed twenty-six of them, and then had to wait all night for light to come again, keeping ready all the time for any kind of attack. Bombs and shells were dropping all round us, and we had a nightmare of a night. We were on the alert all the time, and at first light the enemy batteries started up again, wrecking our breakfast.

" At first light on November 4th we heard that the Axis forces had begun to withdraw. They must have gone in a devil of a hurry, because they left any amount of equipment behind them. Later on in the campaign, when they had a bit more time, they used to fix booby traps to cameras, binoculars and revolvers, so that if you picked them up you went up with them. They also fixed up mines beneath their dead, so that when we moved them to bury them we were blown up.

" Now we really could push on the pursuit of the enemy, and this was where the Crusaders came into their own, for their speed was essential in chasing him and getting round behind his anti-tank guns. We had to shift several of his big 88-mm. anti-tank guns before we could get on, but we really did keep moving, trying all ways to cut off the flying enemy, shooting up the stragglers, and smartening up the tail of his columns. Once, as we came over the crest, we saw a lot of lorries with men all around them camped in a depression. We could not quite see whether they were ours or theirs, until suddenly I spotted a motor cyclist with an obviously German tin hat. Before I had time to give my gunner the fire-order, he opened up himself with the Besa machine-gun, and the motor cyclist toppled over and over like a shot rabbit. I then shouted over the wireless, 'Go in amongst them,' and we dashed forward, spraying them with machine guns. As we came into the camp I saw an anti-tank gun pointing straight at us about thirty yards away. We swung the tank and shot clean over him, smashing the gun and killing the crew.

" We chased the Germans right out of Egypt, past Tobruk, and they were falling back on El Agheila when I was put into an aeroplane, and brought home to give a first-hand account of the action."

Trooper William Hastell, 11th Hussars, who entered Tunis with the first echelons, speaks:

" Dramatic indeed was the order for the regiment to switch from the Eighth to the

First Army. We proceeded straight away, travelled all night through country not unlike the Cumberland fells, and by daybreak we were only 30 kilos from our appointed position. At noon we arrived. We had a brew-up and a feed, and then commenced the trek. Day after day we lessened the distance, dodging through cornfields, around mountain passes, through farmsteads and small villages. Strafed, shelled, bombed (once by the Yanks, so far ahead did we get), until at last we reached the last range of hills at the peak of which we knew we would have Tunis in binocular range.

"Make it we did on that memorable seventh of May, our viewpoint a vineyard on the slope of a hill. Down into the valley we went, a cart track taking us past a farmhouse leading to the tarmac road and a signpost—Tunis eight kilos.

"A beautiful road it was—lovely and smooth, winding its way through suburban villas to be found on the outskirts of any big town. It was all very homely.

"Suburbia finished, we reached the great archway which marks the entrance to the city. There our little column had a check-up. All present. Two dozen men astride nine armoured vehicles. I was on the seventh.

"Then in we went. Through the archway down a slight incline, straight into the Arab quarter. The pavements were lined with picturesquely garbed natives. They merely stood and stared. On we went to the city proper, through cobbled tram-lined streets with great buildings on either side. Roof-tops, balconies, windows and pavements chock-a-block with people, their faces all conjecture. Who were we? No steel helmets, just an unfamiliar red beret. Were we the last of Jerry or the vanguard of the deliverance so long promised. Still not a murmur.

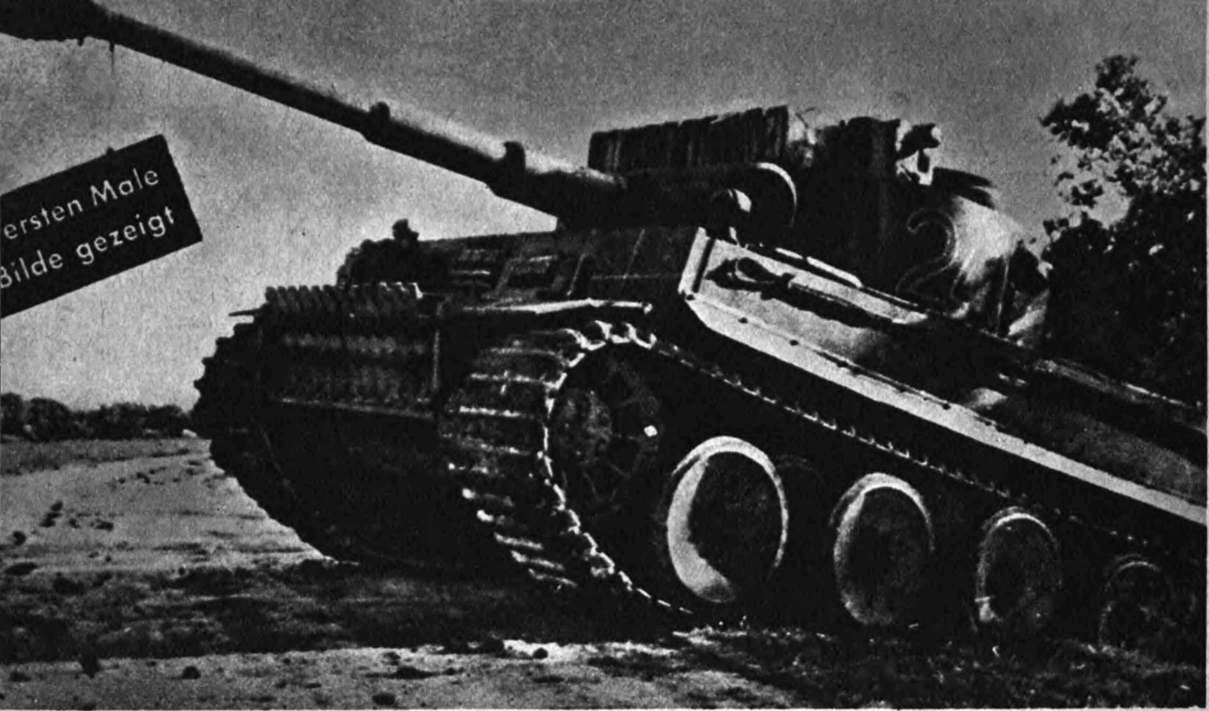
"Then we spotted two Jerries in a barber's having a coiffure. We had them out with their hands up.

"A Jerry officer arm-in-arm with a blonde spotted us. He tried to bolt, but bang!

"Then the people knew. From a seeming whisper the cheering and clapping became one consistent roar. Jerries and Ities appeared from seemingly nowhere, hands well above their heads. Then we started the great round-up. The locals knew the hide-outs, and the rest was easy.

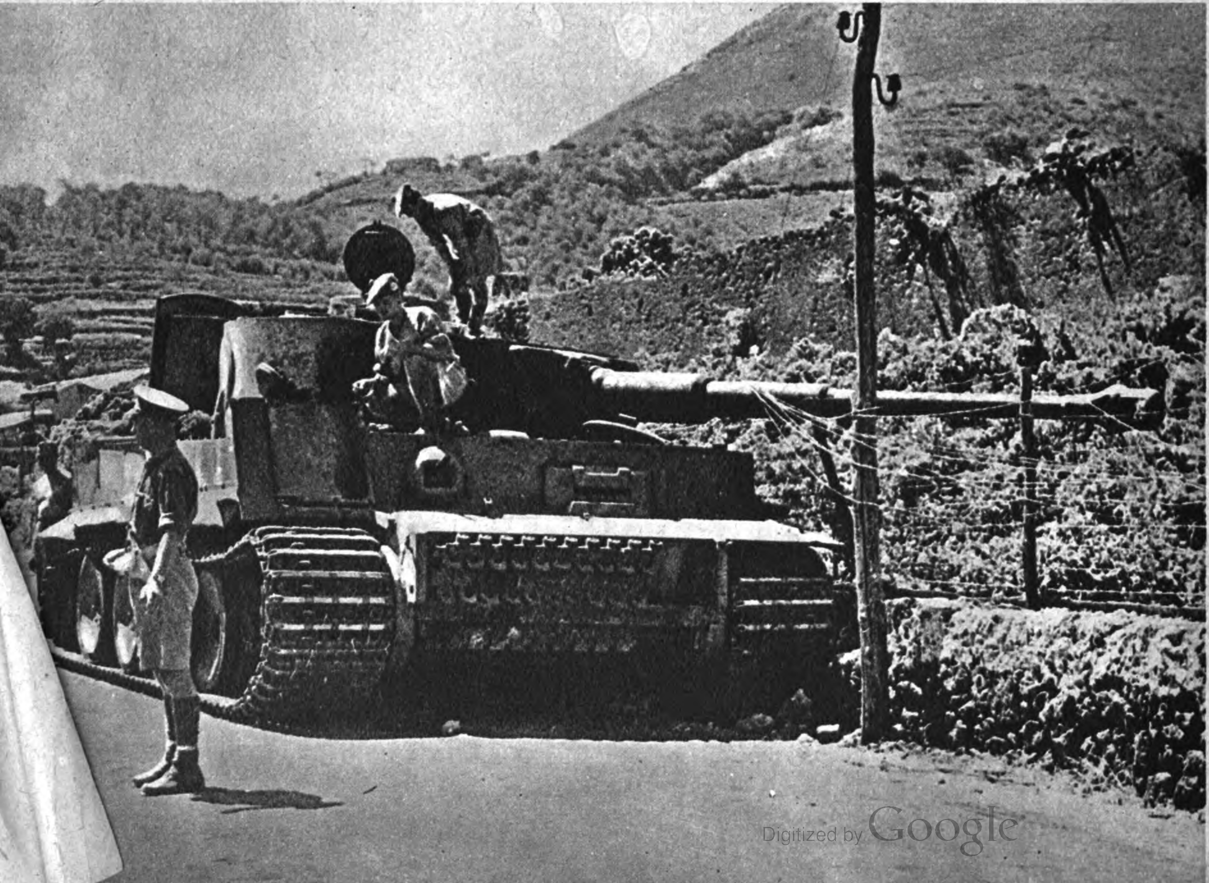
"Through the town we went, but slower and slower. Men and women climbed all over us, kissed our hands, faces, showered us with flowers and gifts of wine. It had to be seen to be believed. Men and women unblushingly cried. It seemed as though the heart of a great city just burst."

The indefatigable Royal Army Service Corps moves up to the battle area with a column of tank transporters, ammunition, food and water trucks.



"This steel colossus prepares the way for the incomparable German Infantry,'' said the Nazi caption to this picture of the Mark VI Tiger Tank.

Bottom : **A captured " Tiger '' gives up its secrets to the Allies.**



These were the 60-ton Tigers, after the First Army had dealt with them in Tunisia.

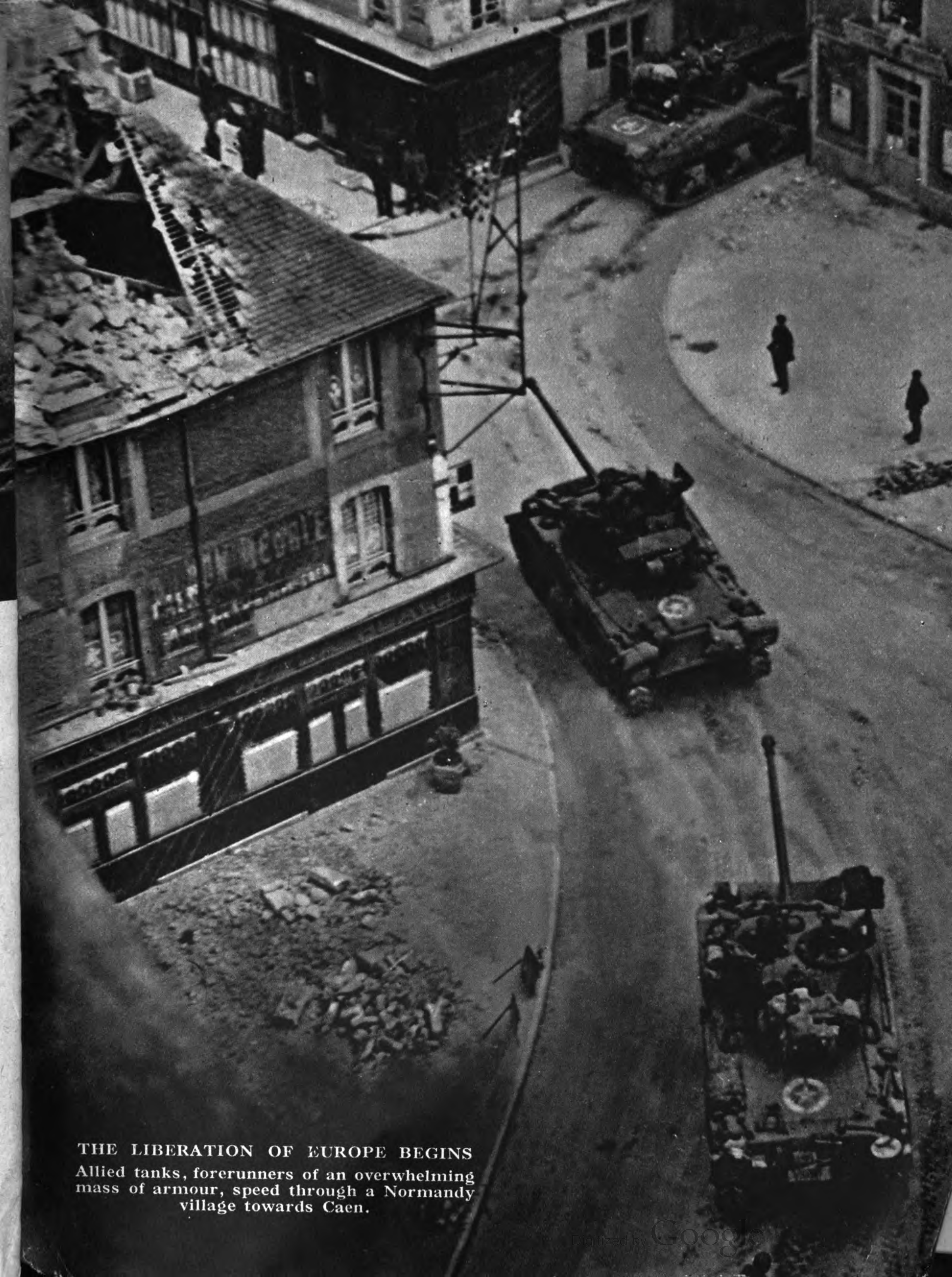
A new British weapon, the "Crocodile" Flame Thrower mounted on a Churchill Tank goes into action in France. The "Crocodile" carries its fuel in an armoured trailer towed by the tank, and attacks enemy strong points at a range of 150 yards.

THE END CAME SWIFTLY. Squeezed into the tip of Tunisia, the Axis armies were faced with surrender or annihilation. Rommel did not wait to see the debacle, for he escaped by air before the final collapse. In a short while the remnants of the "invincible" armies which, five months earlier, stood arrogantly at the gates of Alexandria fifteen hundred miles away, disintegrated into a disorderly mob. It remained only to round them up.

Thus the Royal Armoured Corps, so heavily outnumbered and outgunned in the early stages of the campaign, triumphed in its first great combat with the Wehrmacht, and changed the entire course of the war in favour of the Allies.

In the battle for North Africa, as in other great land battles of the war, the speed and fluidity of armoured warfare have brought about far-reaching changes in military tactics. Once a breach has been torn in the enemy defences a powerful tank column can wreak havoc with the rearmost positions and communications, creating confusion and widening the gap still further for the inrush of supporting armies.

Despite the ubiquity of the modern Tank, however, success in battle still relies on good weather and suitable terrain. Not long after the invasion of the Italian mainland, following the fall of the Cape Bon peninsula, Allied armour was brought almost to a standstill after a brilliant start. Here the tank men had neither good weather nor favourable ground over which to deploy their armour. Indeed, it would be difficult to find country less suited to armoured warfare than the sharp hills and impassable quagmires which proved a formidable, though temporary,



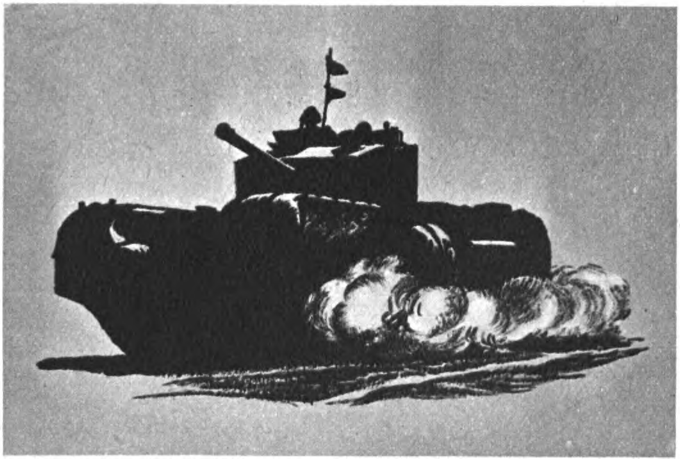
THE LIBERATION OF EUROPE BEGINS

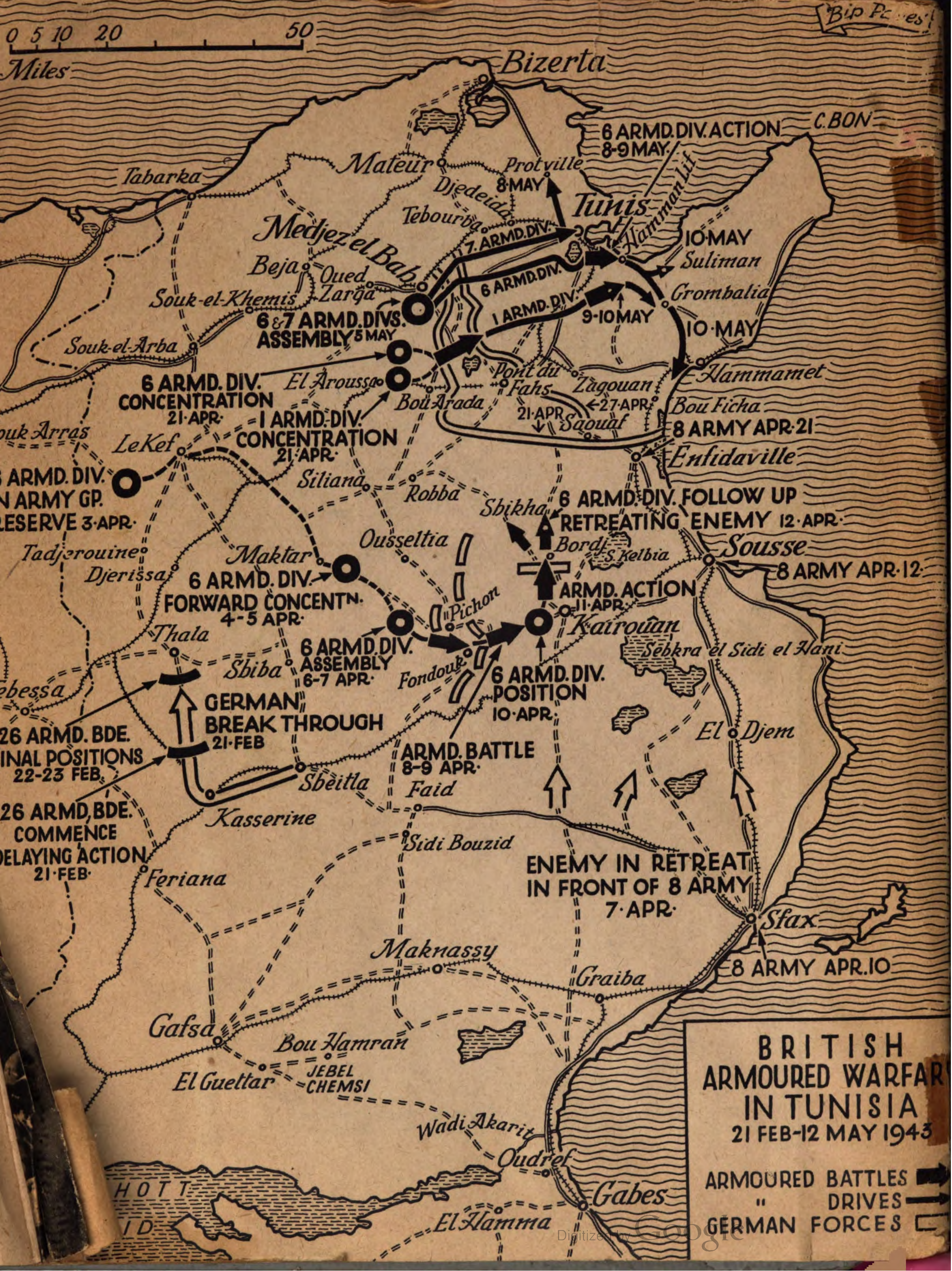
Allied tanks, forerunners of an overwhelming mass of armour, speed through a Normandy village towards Caen.

barrier, to our armies in Southern Italy at the beginning of the campaign.

Similarly the invasion of Normandy, spectacular both in execution and achievement, was followed by a period of comparative immobility, due in part to the slowing up of sea-borne landings on account of bad weather, and even more to the lack of space in which to manoeuvre armoured units. Once a break-through had been achieved, however, the tanks sped through at such a pace that the Germans were constantly outflanked, and within a few days those who had not extricated themselves from the Cherbourg Peninsula were completely sealed off.

It was in France that the Germans won their greatest success in tank warfare, sweeping the valiant defenders aside and eventually into the sea at Dunkirk. It is in France that the young knights in armour of the RAC, with their American and Canadian comrades, are at this moment shattering in final defeat the Panzer hordes that thundered across the fair plains of Europe four years ago. *August*, 1944.




BRITISH
ARMOURED WARFAR
IN TUNISIA
21 FEB-12 MAY 1943
ARMOURED BATTLES
" DRIVES
GERMAN FORCES
0 5 10 20 50
Miles
Bizerta
C. BON
6 ARMD. DIV. ACTION 8-9 MAY
Mateur
Protville
8 MAY
Tabarka
Djedeida
Tebourba
Tunis
Hamman Lif
10 MAY
Suliman
Medjez el Bab
7 ARMD. DIV.
6 ARMD. DIV.
1 ARMD. DIV.
Beja
Oued Zarga
Souk-el-Khemis
6 & 7 ARMD. DIVS. ASSEMBLY 5 MAY
Grombalia
9-10 MAY
10 MAY
Souk-el-Arba
Hammamet
Pont du Fahs
Zagouan
El Aroussa
Bou Arada
6 ARMD. DIV. CONCENTRATION 21 APR.
1 ARMD. DIV. CONCENTRATION 21 APR.
21 APR
27 APR
Saouaf
Bou Ficha
8 ARMY APR 21
Enfidaville
ouk Arras
Le Kef
ARMD. DIV.
N ARMY GP.
RESERVE 3 APR.
Siliana
Robba
Shikha
6 ARMD. DIV. FOLLOW UP RETREATING ENEMY 12 APR.
Ousseltia
Bordj
S. Kelbia
Sousse
8 ARMY APR 12
Tadjerouine
Djerissa
Maktar
6 ARMD. DIV. FORWARD CONCENTN. 4-5 APR.
Pichon
ARMD. ACTION 11 APR.
Kairouan
Thala
6 ARMD. DIV. ASSEMBLY 6-7 APR.
Sebkra el Sidi el Hani
Sbiba
Fondouk
6 ARMD. DIV. POSITION 10 APR.
ebessa
GERMAN BREAK THROUGH 21 FEB
26 ARMD. BDE. INAL POSITIONS 22-23 FEB.
El Djem
ARMD. BATTLE 8-9 APR.
Sbeitla
Faid
Kasserine
26 ARMD. BDE. COMMENCE DELAYING ACTION 21 FEB.
Sidi Bouzid
ENEMY IN RETREAT IN FRONT OF 8 ARMY 7 APR.
Feriana
Sfax
Maknassy
8 ARMY APR. 10
Graiba
Gafsa
Bou Hamran
El Guettar
JEBEL CHEMSI
Wadi Akarit
Oudref
HOTT
ID
Gabes
El Hamma